

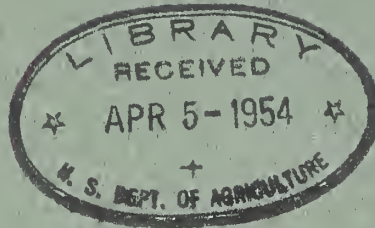
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3 MEMORANDUM

ON THE

MEDITERRANEAN FRUIT FLY

PREPARED FOR

USE OF THE

SUBCOMMITTEE OF THE

HOUSE COMMITTEE ON APPROPRIATIONS

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Prepared by Plant Quarantine and
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Note

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Note.- The information under the first four of the following headings given in capitals was prepared by Dr. C. L. Marlatt, Chief of the Bureau of Entomology. The other information which follows was prepared in the office of the Plant Quarantine and Control Administration.

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MEDITERRANEAN FRUIT FLY.

Dr. C. L. Marlatt,
Chief, Bureau of Entomology.

The following discussion of the Mediterranean fruit fly from the standpoint of history, distribution, biology, etc., and as to conditions obtaining in other countries reached by this pest, has been prepared at the request of the Committee on Appropriations of the House of Representatives.

History and Distribution.

The Mediterranean fruit fly is now believed to be "native" to the coastal region of West Africa below the "humo", on the basis of its occurrence in that region under what appear to be primitive conditions and particularly on the basis of discovery there of important parasitic enemies.

It was first collected and recorded from the Island of Mauritius in 1817--evidently, from other conditions, an introduction.

It spread slowly during the last century (1827-1900), evidently by carriage of infested fruit on vessels to islands off northwest coast of Africa and eventually to all Mediterranean countries.

The infestation of the Bermuda Islands is believed to date from 1865, when a vessel with a cargo of fruit from the Mediterranean was forced by a storm to there discharge its cargo.

South Africa became infested about 1840; East Africa at various points not until the beginning of the present century, including the Island of Madagascar.

The fruit fly reached Brazil 25 or 30 years ago and perhaps much earlier.

Argentina was at one time believed to be infested with the fly but two intensive surveys have failed to show its presence, which, together with favoring conditions for its multiplication there, makes the earlier report unquestionably erroneous, doubtless based on confusion with the native fly which occurs in North Argentina.

The development of refrigeration for ocean steamers, making it possible to hold fruit for long periods, is in a way responsible for the introduction of the fruit fly into such remote districts as Australia, New Zealand, and Hawaii. West Australia was reached in 1897, East Australia (New South Wales) in 1898, and the entire island is now invaded, and also the adjoining Island of Tasmania. Several temporary establishments of this pest were effected in New Zealand between 1901 and 1908, but efforts were promptly made to eradicate it and these are claimed to have been successful.

The fruit fly was brought to Hawaii in 1910 through the agency of infested fruit on a ship from New South Wales. No fruit was landed, but the flies were swarming on the ship and easily reached the abundant fruit growing throughout the city, some of it within a short distance of the docks.

Effort to Exclude This Pest from United States.

The Mediterranean fruit fly was one of three pests specifically mentioned in the Federal Plant Quarantine Act of 1912, and concerning which the act was made immediately effective. Since that time, the Federal Government has enforced strict quarantine against the entry of host fruits and vegetables from all countries known to have been reached by this pest. In the course of such enforcement a great many interceptions of contraband fruit infested with this pest have been made, even at ports as far north as Boston, many at New York, at least one at a Florida port, and some 55 at Pacific ports, the latter chiefly concerning fruits and vegetables from Hawaii. However, hundreds of lots of contraband fruit not determined as infested have also been intercepted and destroyed and many of these may have been infested.

Long prior to 1912, California began a system of inspection at ports of entry of that State of plants and plant products for the purpose of excluding insect pests, including fruit flies--a service which was tremendously strengthened and increased following the appearance of the Mediterranean fruit fly in Transpacific islands and countries. California has continued this service at the expense of the State but it has been made part of the Federal port inspection service and the State inspectors have been commissioned to enforce the Federal Act. It may be noted here that a similar service was established by Florida in 1915, and since continued also at the cost of the State, but with similar incorporation as a part of the Federal service.

Possible Source of Florida Infestation.

The means of entry of this pest into Florida is not known. All that can be said is that it was almost certainly brought in with infested fruit which gained entrance either as contraband fruit through the regular channels of commerce or through illicit or unsupervised traffic. In the former case, the opportunity for introduction of such contraband is intimately related to the effectiveness of the port inspection forces--a branch of the service which has always been undermanned.

The Economic Importance of the Mediterranean Fruit Fly.

The economic importance of this pest has been made the subject of a special discussion, attached hereto, entitled "Mediterranean Fruit Fly Conditions in Other Countries Vs. United States." This statement discusses the conditions favorable or unfavorable to the fly in the various countries concerned and indicates the nature of the damage occasioned. These conditions are contrasted with climatic and fruit production conditions in Florida and other portions of the United States.

- 3 -

In brief, this insect is recognized the world over as perhaps the worst of all known fruit pests, and in practically all countries where climate and fruit conditions are favorable it has occasioned enormous losses, and has eliminated in some cases the production of certain types of fruit practically altogether. The discussion referred to indicates also the conditions of climate, of control, harvesting and marketing, in various countries which make it possible for the production and utilization of certain of the host fruits of the fly.

Life History and Habits.

The Mediterranean fruit fly as adult is a 2-winged insect, a little smaller than the common house fly, of a light resinous color, beautifully marked on the body with darker brown or black, and the wings also shaded with resinous bands. (See Circular PQCA 230, herewith). These markings and other structural characters make it possible for the specialist to separate this insect with accuracy from all other types of fruit and other flies.

The female fly can protrude a sharp egg-laying instrument (ovipositor) with the aid of which she burrows a hole through the rind or skin of fruits or vegetables for the purpose of depositing a small batch of eggs, usually about 6 at a time. The total egg-laying capacity of a female is unknown. One specimen in captivity deposited 622 eggs during a 5-months' period and when dissected after death still contained other eggs.

The life of the fly may be several months or, in exceptional cases, nearly a year, which adds enormously to its possibility for damage and for maintaining itself in the absence of fruits in which to breed, either in spring or fall or, in countries with mild winter climates, during the winter.

The eggs, in summer temperatures (70 to 80°) normally hatch within two days.

The larval period at similar temperatures may be as short as five days but probably normally is about 8 days. After the larva reaches full growth it makes openings to the surface of the fruit and at the end of the period escapes through these openings and falls to the ground.

The "pupal" period--understanding that to mean the period between the escape of the larva from the fruit, its entry into the soil and the emergence of the adult fly--may be as little as 6 days, but probably at temperatures indicated, is normally 9 or 10 days. This period is normally spent in the soil a short distance, rarely exceeding two or three inches, below the surface; or it may be spent in any crack or crevice, or even exposed, indoors or out.

The adult insect, if in the soil, burrows up to the surface, and, for

about 4 days, flies about and feeds on fruit juices or plant excretions, honeydew of insects, etc., mating during this period, and may then begin the deposition of eggs for a new generation.

The shortest time indicated in these figures for a complete generation--from egg to egg--is 17 days, with an average period of 23-24 days, this being for hot summer weather and favorable host fruit or vegetable conditions. During the period in fall, winter and spring, the fly becomes more inactive and all of these periods are lengthened. Under conditions such as obtain in Hawaii and Florida, some 12 annual generations and possibly more may be expected--averaging summer with winter conditions.

The rapidity of multiplication of the insect may be understood from this epitome of its life history. For example, and for purposes of avoiding exaggeration, if we take the number of descendants of a single female as 200 instead of a possibility of 600 or more, we would get for the first generation 100 males and 100 females; and for each succeeding generation we would again have 100 females as the multiplier. On this basis, at the end of the 5th generation, there would be theoretically a total of ten billion females (not counting the males) and this total could be reached, under Florida spring and summer conditions, in 4 or 5 months!

Incidentally, this power of multiplication, in the presence, from the fly standpoint, of unlimited fruit in which to breed, could account for all the fruit fly development in the intensely infested district at Orlando and the spread therefrom on the basis of an introduction in 1928. The percentage of infestation decreased rapidly beyond Orlando, which would be in entire accord with the belief that the spread throughout central Florida from Orlando as a center was due to normal drift and carriage of fruit from this center--taking into consideration motor traffic, week-end visits to the coast and other points of interest, etc., as well as actual movement of fruit commercially.

Hibernation of the Fruit Fly.

In many fruit fly countries the activity of the fly is more slowly slowed down in winter, namely, the egg, larval and pupal periods are more or less prolonged and the flies themselves may survive and be seen about trees on warm sunny days. In colder districts true hibernation may take place, as larvae in fruit or as pupae in soil or other situations, and possibly also as adult flies in such protections as are sought, for example, by the common house fly. Such successful hibernation may take place far north of the normal continuing occurrence of the insect. The Paris outbreak, referred to in the discussion of the behavior of the fruit fly in various countries, may have been of this nature, or possibly resulted from separate introductions with infested fruit.

History of Discovery in Florida.

That Orlando was the point of introduction of this pest in Florida would seem to be fully established by the intensity of the infestation there in a number of groves and its very rapid decrease outside of the immediate vicinity of the city. As was early determined, in 3 or 4 considerable groves in Orlando the infestation in grapefruit had reached, when discovered, 75 to 100 per cent, and minor infestation was found generally throughout the city and suburbs. The actual discovery of the Mediterranean fruit fly resulted from the examination of some grapefruit which had been obtained from a small experimental citrus planting in Orlando, utilized by the Bureau of Plant Industry and Entomology of the Department of Agriculture and situated at a distance of about a mile from the heavily infested groves. This experimental, varietal planting in point of infestation was comparable to other points of minor infestation in the city, and had evidently been reached from the more heavily infested centers by the normal spread of the pest throughout the district. The discovery of infestation of this fruit was made on April 6, after most of the fruit in question had been consumed.

The larvae found were tentatively identified as possibly Mediterranean fruit fly and specimens in alcohol were brought by special messenger to Washington for determination, arriving the evening of April 9. Determination was made the morning of the 10th, confirming the identification, and on the afternoon of the same day the writer, in company with Dr. Baker, chief of the Tropical and Subtropical Plant Insects Division of the Bureau of Entomology, left for Florida. On arrival in Orlando the day following, the work of cleanup was already under way.

The details of the organization and quarantine and eradication work are summarized in a statement furnished by request as a supplement to the writer's testimony in connection with the hearing on the Agricultural Department appropriation bill for 1931. A reprint of this statement is included with this document. This statement discusses also the control work undertaken in Southern States, necessitated by the movement in large quantities of Florida fruit into these States, which in a good many instances were later determined to be actually infested with maggots of the fly.

Another statement is included, namely, a mimeographed circular issued May 20, 1929, giving the history of the control effort up to that period and carrying a plate illustrating the fly, larvae and pupae, and another plate showing the larval characteristics of the Mediterranean fruit fly as contrasted with similar characters of other flies which might occur in fruit and be mistaken for the former.

Host Fruits and Vegetables.

As a brief statement, it may be said that the fly may infest practically all fruits and several important vegetables. The only positive exception to fruit is the pineapple. In the case of lemons and sour limes, however, the breeding of adult flies from perfect, i.e., unbroken or uninjured fruit has never been demonstrated, and hence for practical purposes

these fruits are not considered as hosts. The favored hosts are stone fruits, pear, apple, etc., and others with thin skin, including the coffee berry, the Surinam cherry, and many others; but in places where the climate and fruit conditions result in great fly abundance, the presence of favored fruit does not give much immunity to less favored sorts. As to citrus fruits, the grapefruit seems to be favored and the sour orange next. In general, the commercial types of oranges are not heavily attacked until they are fairly well ripened. A total of several hundred host fruits and vegetables are now known, some 72 having been recorded for Hawaii and 47 for the Island of Bermuda!

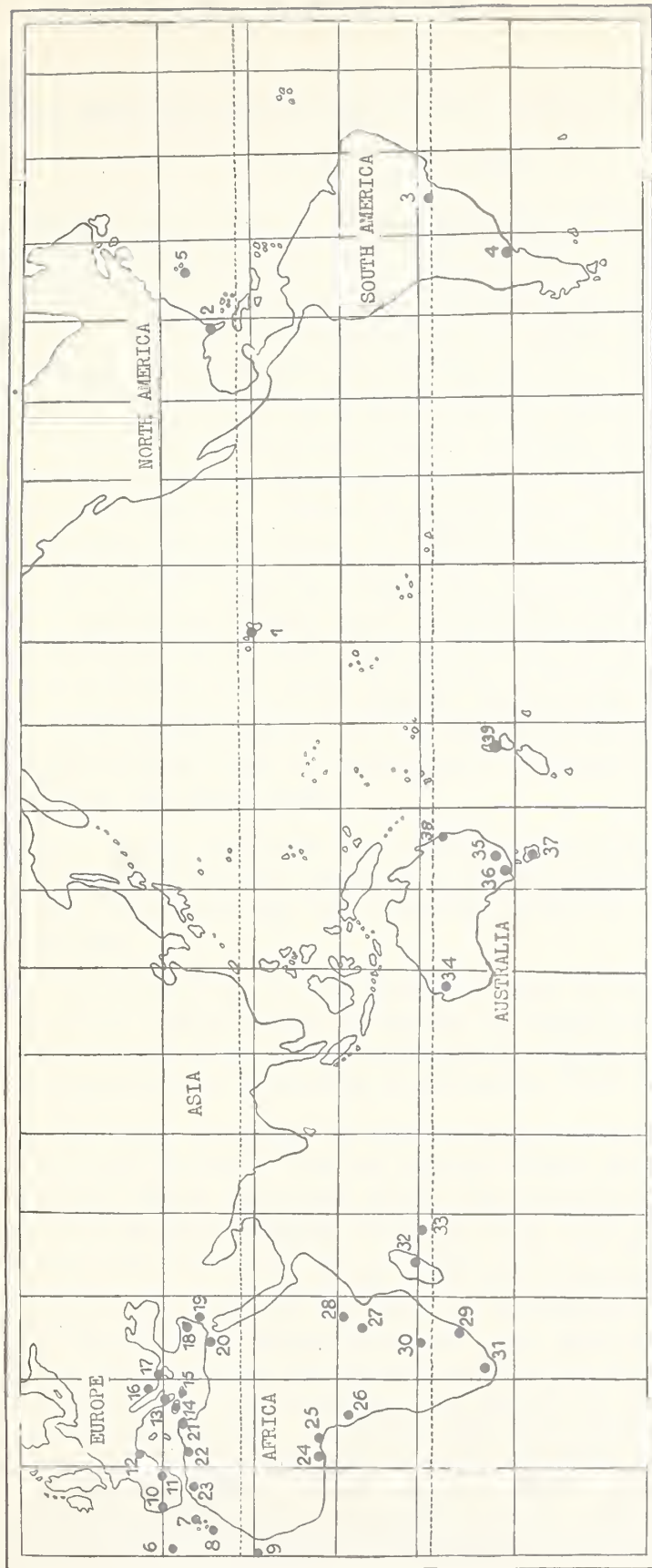
The important vegetables which are subject to attack of the fly include tomatoes, eggplants, bell peppers, lima and broad beans, and these are brought under restriction as to movement from Florida. With respect to tomatoes, the green tomato is believed to be immune to attack in the field and very rarely indeed are ripe tomatoes attacked. The fly will, however, breed in many other vegetables under forced conditions.

Control of the Fly in Foreign Countries.

In many of the foreign countries where the fruit fly occurs it is accepted as a visitation of Providence! In South Africa a determined fight has been made against the pest by spraying with poisoned sweetened bait, a method which originated there, and this method is briefly discussed in the attached paper on Mediterranean fruit fly conditions in other countries, etc. The same method of poisoned bait has been tried in the States of Australia and in Hawaii, in the latter country at least with practically no success; and a substitute therefor of parasitic control has been developed, the results of which are discussed briefly in the paper just referred to under the heading of Hawaii. In Spain and other European countries the control, if it can be called such, is practically limited to what appears to be a normal cleanup of orchards, namely, the elimination during and at the close of harvesting of all fallen and discarded fruit so that at the end of the season the orchard is bare of any waste fruit either in the tree or on the ground--a control measure undoubtedly of high importance if the fruit so removed is properly disposed of, either by feeding to animals or by burying. In general, however, the controls in foreign countries are those merely which Nature provides, namely, climatic. In addition to such controls, a great deal of fruit is saved and enters into consumption by the habit of picking many fruits while still comparatively green; in other words, before they reach a stage of attractiveness to the fly. This in Hawaii applies to the mango and the papaya, two abundant and common food products in these Islands, and applies also to the early harvesting and picking of the crop of citrus fruit in Spain in midwinter, and to similar conditions which apply to winter-ripening oranges in Brazil, Italy, and other countries. As indicated in the discussion referred to, the temperature conditions in midwinter in such European countries are such as to practically stop fly activity, and this gives an opportunity to harvest and dispose of crops of citrus fruit with relatively small loss, although a certain percentage of all such fruit which enters into commerce is undoubtedly infested.

In the United States, if this pest is not eradicated, its control would remain a continuing and very expensive factor, involving all of the cleanup operations which we are now enforcing as a feature of the eradication campaign, namely, the picking up and destruction of windfalls in the orchards throughout the ripening season of the fruit, the limitation of the harvesting season, the prompt picking of all fruit and cleanup of orchards at the end of the stated period, the maintenance of a nonhost fruit period throughout the summer months, together with frequent sprayings. As long also as the fruit fly was limited to Florida or restricted districts of the United States, it would probably be necessary to enforce the present burdensome and expensive quarantine controls to delay as long as possible the spread of the pest to other important fruit sections, including fruit and vegetable sterilization and packing house, transportation, and marketing controls.

DISTRIBUTION OF THE MEDITERRANEAN FRUIT FLY (*CERATITIS CAPITATA* WIED.)



- | | | | |
|----------------------------|---------------------|-----------------------------|---------------------------|
| 1. Hawaii, 1910 | 11. Spain, 1842 | 21. Tunis, 1885 | 31. South Africa, 1840 |
| 2. Florida, 1929 | 12. France, 1900 | 22. Algiers, 1859 | 32. Madagascar, 1914 |
| 3. Brazil, 1901 | 13. South Italy | 23. Morocco, 1921 | 33. Mauritius, 1817 |
| 4. Argentina, 1905 (?) | 14. Sicily | 24. Dahomey, 1910 | 34. W. Australia, 1897 |
| 5. Bermuda, 1865 | 15. Malta, 1875 | 25. Nigeria, 1910 | 35. New South Wales, 1898 |
| 6. Azores, 1829 | 16. Albania, 1916 | 26. Congo, 1910 | 36. Victoria, 1907 |
| 7. Madeira, 1827 | 17. Greece, 1916 | 27. Uganda, 1909 | 37. Tasmania, 1899 |
| 8. Canary Island | 18. Cyprus | 28. British E. Africa, 1914 | 38. Queen's Land |
| 9. Cape Verde Island, 1829 | 19. Palestine, 1904 | 29. Delagoa | 39. New Zealand (?) |
| 10. Portugal, 1925 | 20. Egypt, 1904 | 30. Rhodesia, 1912 | |

Relation of Climate

In any examination of fruit fly abundance and damage, it is apparent that climate, and particularly that of the winter season, is the important controlling factor. Next in importance is the availability of host fruits the year round. It is of interest to examine the influence of these factors as they obtain in other countries and particularly in the great Mediterranean Basin, where the fly has been established as to some points for nearly a hundred years and quite generally for the past forty or fifty years. With respect to European countries it may be noted that all those touching on or projecting into the Mediterranean lie practically altogether above latitude 40, namely, the latitude of Philadelphia and bordering Kansas on the north and crossing northern Colorado and northern California. The only exceptions are the southern half of Spain and the extreme tip of Italy, including Sicily and the southern half of Greece. While the temperature of these countries is materially affected by the Mediterranean and the air currents from north Africa, nevertheless the high latitude means a shortened summer and a lengthened autumn and spring, namely, temperature conditions for at least six months of the year which greatly restrict fruit fly activity and check it almost completely for at least three months. This is especially true of France, Spain, and Italy. As illustrating conditions in southeastern Europe, it may be noted that Constantinople has a winter more comparable to that of Washington, influenced as it is very much by the cold winds from the Black Sea.

By contrast, it may be noted that Florida lies largely between latitudes 25 and 31, and the Gulf States, taken as a whole, between latitudes 25 and 35, and, in addition, this area has the favoring influence of the Gulf of Mexico and the Gulf Stream.

To better illustrate fruit fly possibilities in the United States I have had charted the mean temperatures by months of important fruit fly centers, covering for each point a series of years, and introducing for comparison the corresponding temperatures obtaining at Orlando, Florida.

The first of these diagrams or charts compares mean temperature conditions obtaining at Orlando, Florida, and at certain other points in the Gulf States with Paris, France, where important fruit fly invasions have been experienced. It will be noted from this diagram that the mean temperature for January at Orlando, Florida, the center of the invaded area, is 25 degrees Fahrenheit higher than Paris. It is to be noted also that intermediate between Paris and Orlando in winter temperatures in order of succession are Nashville, Tennessee, Macon, Georgia, Charleston, South Carolina, and Mobile, Alabama. In other words, at all of these points the winter climate is more favorable to the fruit fly than it is at Paris. Furthermore, the summer in the South, and even throughout much of the United States, is warmer and much longer than it is normally in southern Europe, and cultivated host fruits, peaches, etc., are in much greater extent than in Europe. There is therefore a very patent risk of the fruit fly invasion extending northward and becoming fully established at least in the Cotton Belt States, with likelihood of temporary or seasonal establishment in States farther north.

The mean temperature records for important fruit centers in Mediterranean countries as compared with Orlando are the subject of the second of these diagrams or charts. A similar comparison with respect to important centers in the Southern Hemisphere is made in the third chart.

With respect to the Mediterranean points, it will be noted that Orlando has a much milder winter than any of these, including even Cairo, Egypt. Attention may also be called to the very low winter temperatures shown for Constantinople, the January-February mean of which is about 41. Comparing the mean temperature for January-February of these Mediterranean points with the same months for Orlando, we find the following order, beginning with the lowest mean: Constantinople, 41; Naples, 47.4; Athens, 48.5; Valencia, 49.8; Palermo, 51.2; Orlando, 59.

With respect to the points indicated in Diagram 3 for the Southern Hemisphere, it will be noted that Orlando, Florida, presents a milder winter than any of the points considered except Rio de Janeiro. Sao Paulo is charted to represent the coffee district of Brazil, which is also an important fruit fly center. Beginning with the lowest winter temperature, these points arrange themselves in the following order: Sydney, 53.8; Cape Town, 55.1; Sao Paulo, 58.5; Pretoria, 59.3; Orlando, 59; Rio de Janeiro, 68.6.

It is well understood that insect activity in general begins with a mean temperature of about 50° F., but in the case of the fruit fly, clearly a subtropical species, important activity would begin at a somewhat higher temperature. This activity increases to a maximum at temperatures of 70 to 80° F. It will be noted that while none of these temperatures as recorded go much below the point of possible insect activity, in the case of Orlando, Fla., the mean of the coldest months, January and February, is approximately 59° F., and rapidly rising from that point in October, December and February-March. These diagrams are in substantial confirmation, therefore, of the judgment that in Florida we have temperature conditions unusually favorable to the fly. In addition to that, Florida presents throughout the year an abundance and availability of fruit perhaps not equalled elsewhere, not even in Hawaii, because these Islands lack the citrus crop of Florida which, with other fruits, furnishes practically unlimited host fruit material throughout the year.

The mean monthly temperatures for all of the points covered in these charts are reproduced in tabular form, including the temperatures for Hawaii, and, for comparison, Washington, D. C.

While it is unlikely that the fruit fly would overwinter if actually subjected to the out-of-door temperatures which characterize the States north of the Cotton Belt, it must be remembered that the fruit is not kept out of doors but in situations favorable to the hibernation and survival of the larvae and pupae coming from infested unsterilized fruit. The pupae could remain in this stage until favorable outdoor temperatures existed in May or June for the emergence of adults. Furthermore, the adult fly has the power to live for many months, sometimes nearly a year. These conditions, together with our very long summers as compared with central and western Europe, might readily lead to summer and fall infestation of peach or any

DIAGRAM I.

MEAN MONTHLY TEMPERATURE.

Jul. Aug. Sep. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May Jun.

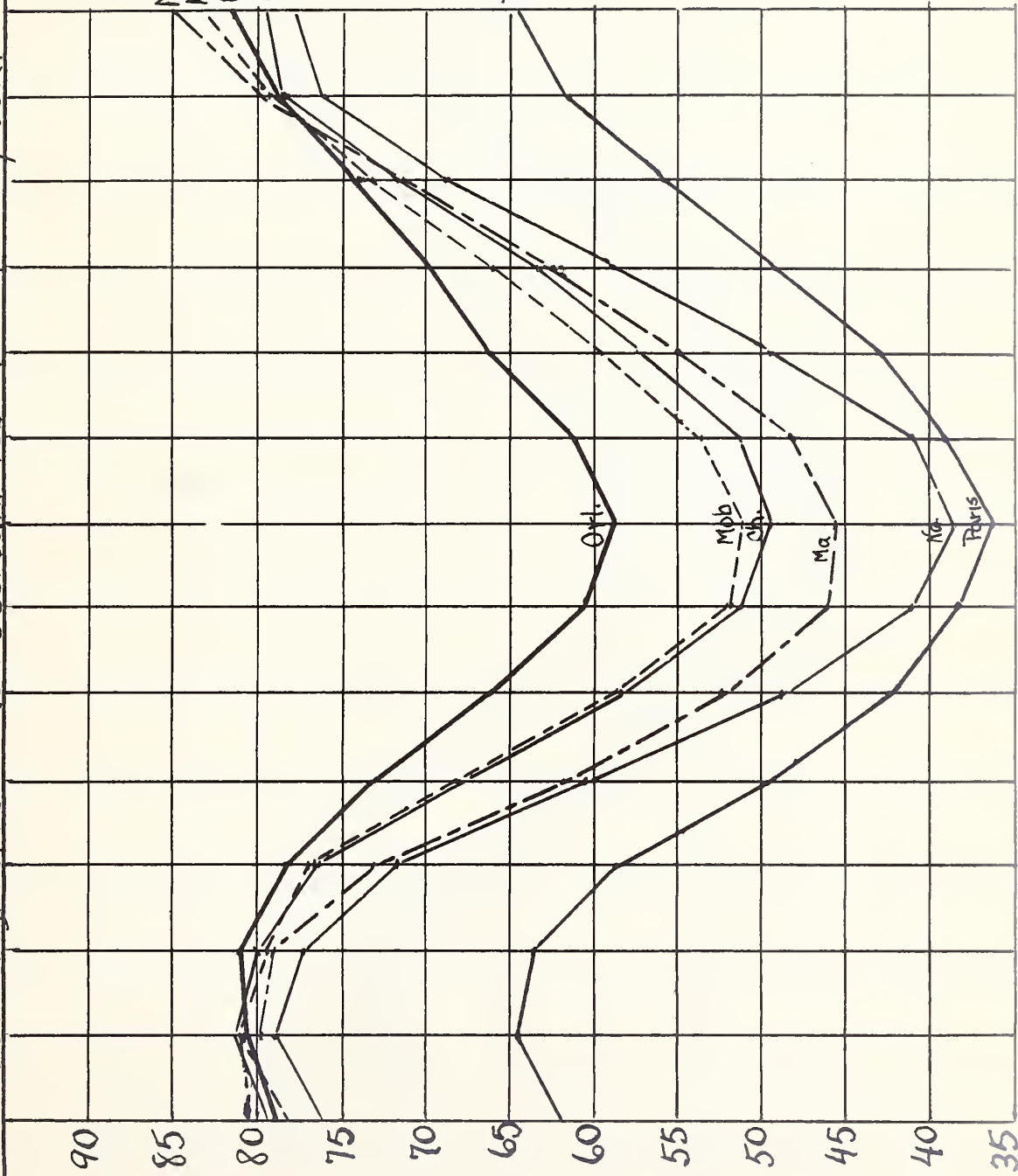


DIAGRAM II.

MEAN MONTHLY TEMPERATURES.

°F. Jul. Aug. Sep. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May Jun.

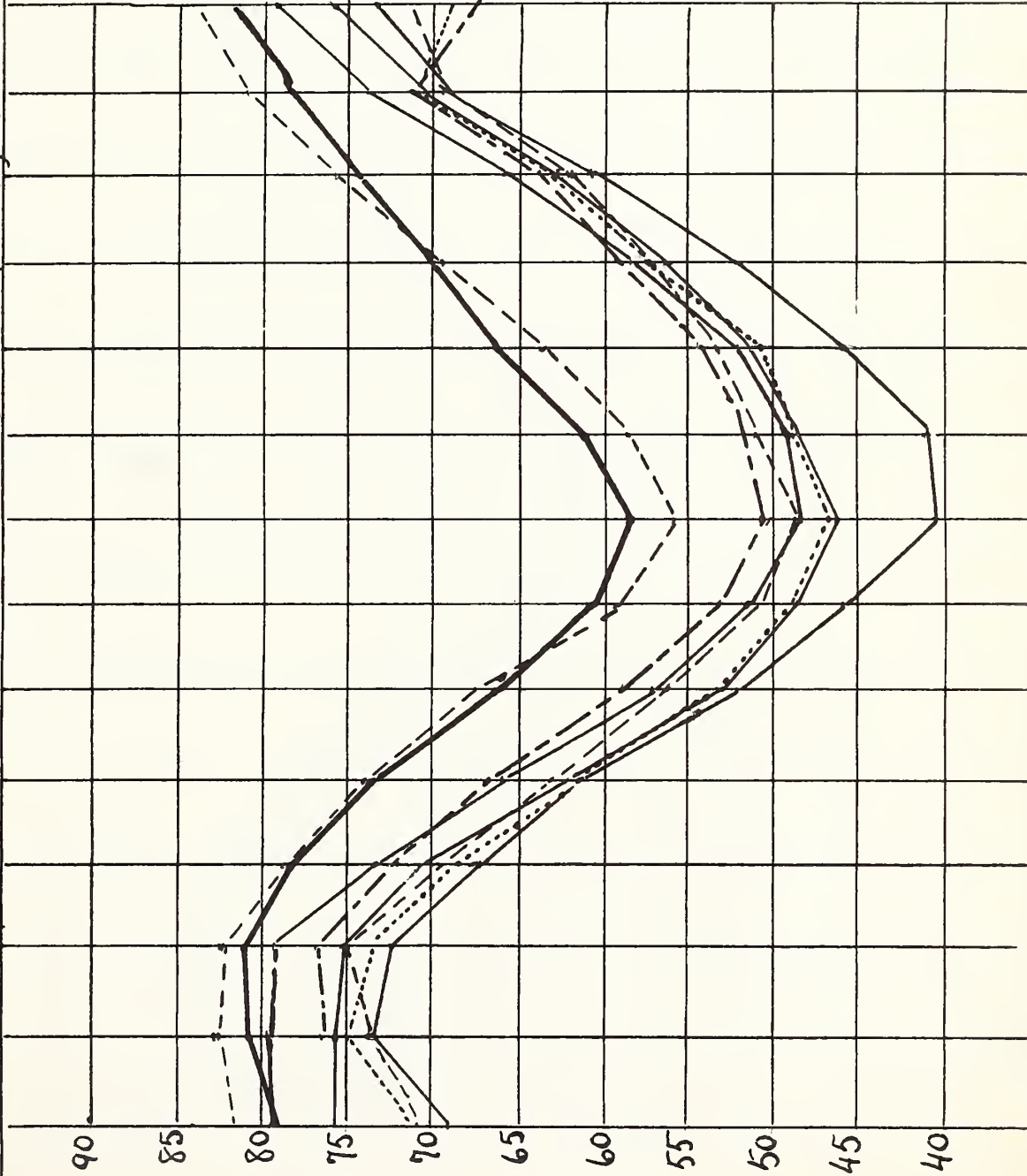
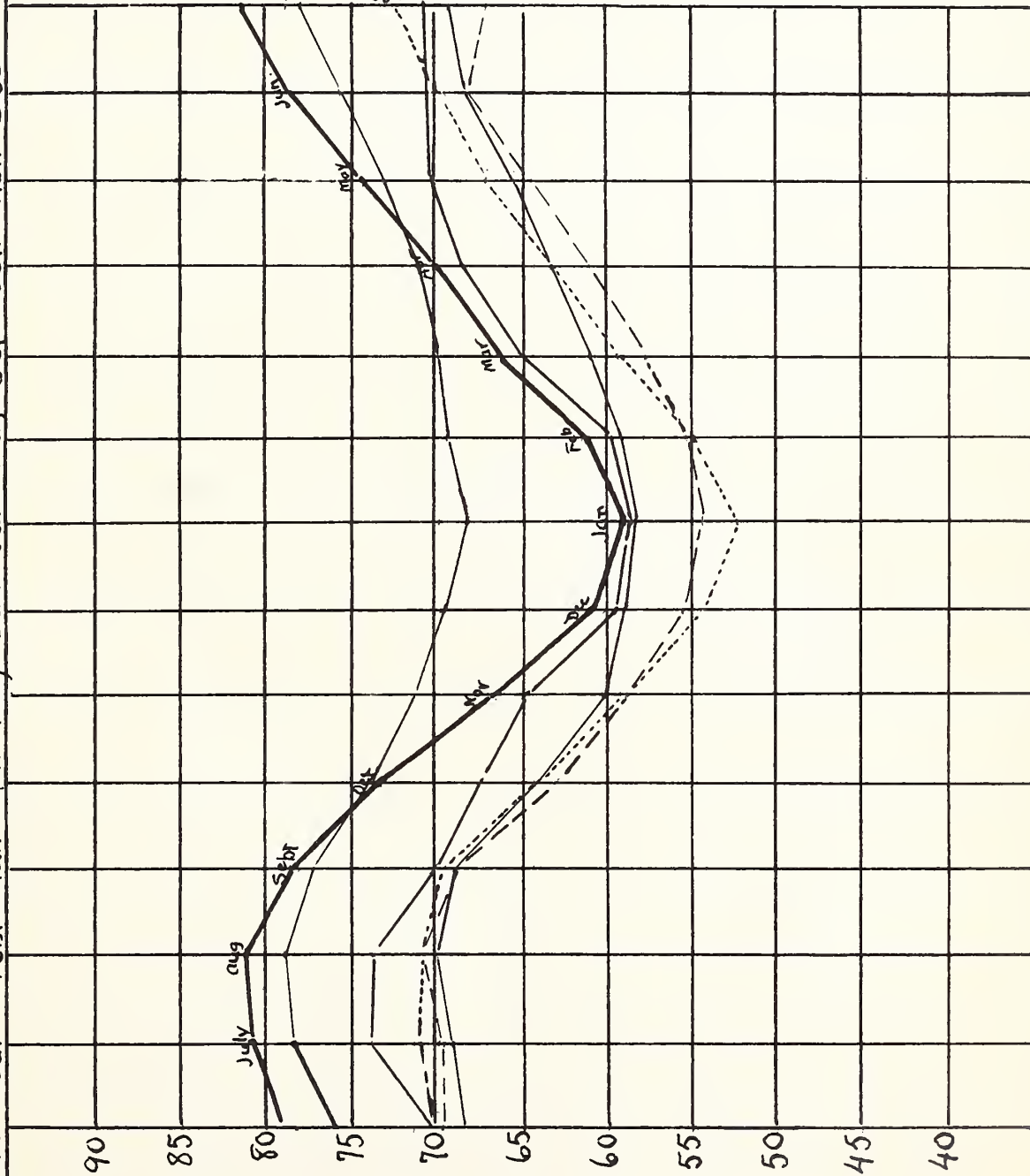


DIAGRAM III.

MEAN MONTHLY TEMPERATURES.

°F. Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.



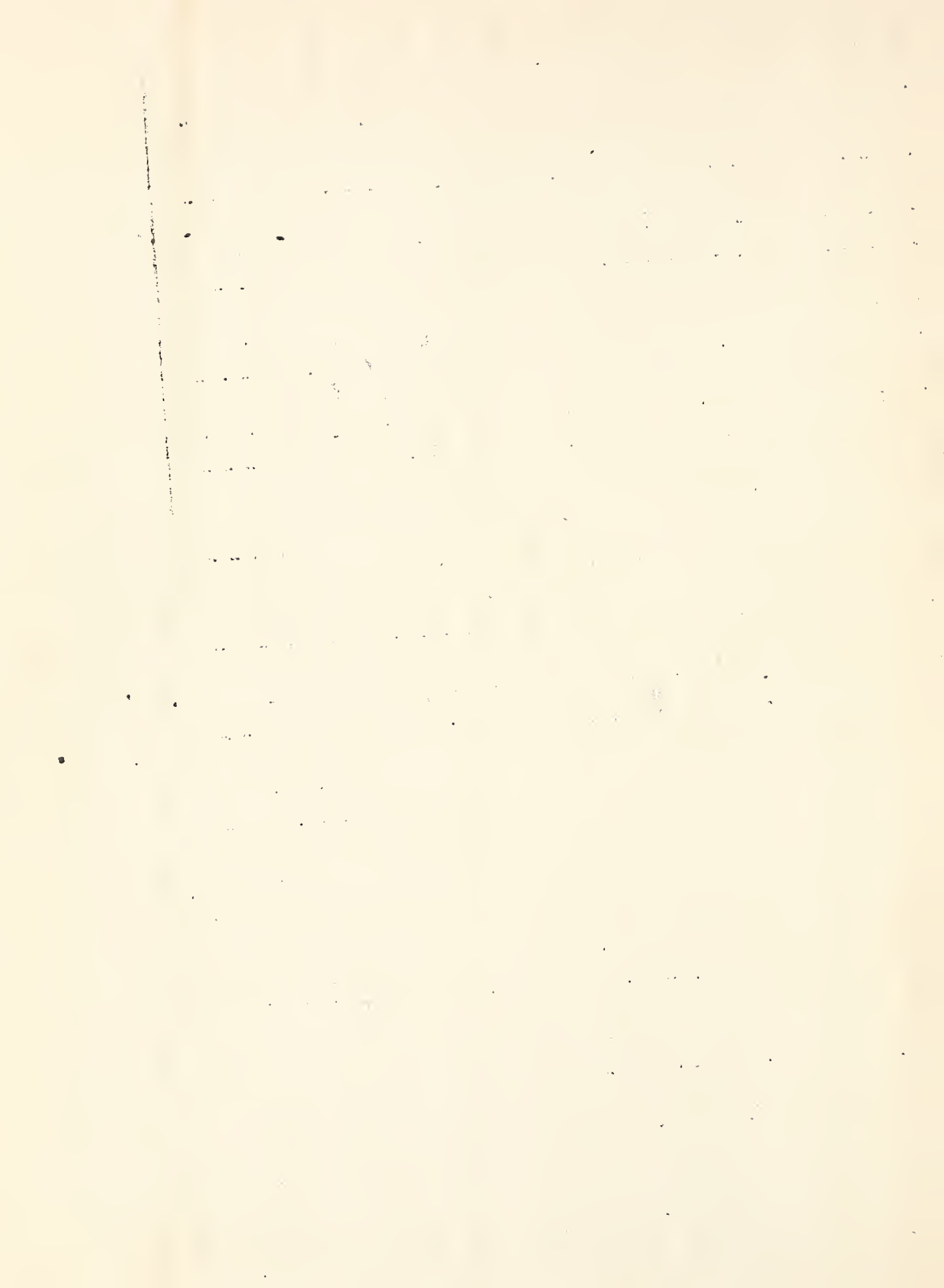
MONTHLY TEMPERATURES

Northern Hemisphere

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Years
Nice	47.1	48.8	50.9	57.8	63.9	71.4	75.	74.0	69.1	62.2	53.5	48.2	30
Valencia	48.4	51.2	53.4	57.4	62.8	69.4	74.8	75.	69.8	63.2	56.7	50.6	20
Constant.	46.6	41.0	45.7	52.4	61.	69.	73.	72.2	67.2	61.4	52.4	45.4	60
Falerno	50.6	51.8	54.6	58.6	64.	71.	76.4	76.8	73.	67.	59.2	53.4	40
Cairo	55.9	58.1	63.7	68.4	75.4	80.0	82.8	82.4	70.3	74.3	67.5	59.2	11
Naples	46.6	48.2	51.4	56.8	63.2	70.2	75.6	75.2	70.4	62.8	53.	48.9	40
Athens	48.4	48.7	52.2	58.6	66.	74.2	79.8	79.4	73.4	66.	57.2	52.	26

Southern Hemisphere

Rio	77.8	70.	77.	74.4	71.2	69.2	68.	69.2	69.8	70.8	73.2	76.4	55
Sao Paulo	60.9	70.	60.	64.6	60.4	58.6	58.	59.	61.6	63.	65.6	68.	15
Pretoria	73.6	73.4	70.	67.2	65.	59.8	58.8	59.9	65.	68.	70.	70.	3
Capetown	69.9	70.8	68.1	63.2	58.9	55.7	54.7	55.6	57.9	61.2	64.4	67.9	68
Sydney	71.7	71.3	69.3	64.7	58.8	54.6	52.7	55.	59.2	63.5	67.1	70.1	66
Miscellaneous													
Honolulu	70.5	70.7	71.1	72.7	74.6	76.2	77.3	78.1	78.0	76.8	74.6	72.6	14
Paris	34.8	39.2	50.3	49.2	56.2	61.6	64.6	63.9	58.4	50.	42.4	38.0	50
D. C.	33.8	34.7	42.9	53.6	64.1	72.3	76.5	74.3	68.2	56.9	45.5	36.4	51



other deciduous fruits grown in these States. The rapidity also with which this insect develops makes it entirely probable that it could increase in the North during a single season in such numbers as not only to occasion serious damage locally but also to lead to its spread into States to the south, where it could gain firm and continuing foothold.

From the standpoint of climate and opportunity -- abundant host fruits the year round -- Florida is apparently the most favorable region for the fruit fly yet reached by this pest. On the record of last spring, in what is the probable center and origin of the invasion, there was exhibited a much greater infestation than has ever been reported as to citrus fruits elsewhere -- namely, in the case of several orchards, from 75 per cent to practically 100 per cent infestation. This applied to grape-fruit -- oranges in the same orchards being much less infested. The winter temperatures at Orlando, which is central to the main citrus area of the State, are rarely such as to more than check for a period of two or three months the breeding activity of the fly, and in point of fact it seemed to be evident that in the winter of 1928-29 such activity was little, if any, reduced, as indicated by the conditions obtaining in the first week of April, 1929.

The countries reached by the Mediterranean fruit fly which perhaps most approach Florida in conditions, both climatic and in host fruit availability, are the Union of South Africa and New South Wales and other States of South and West Australia, and in these countries fruit fly damage has been very heavy. The Hawaiian Islands, lying between the latitudes 20 and 23 north and with continuous fruit production, present conditions very favorable for the fly, affected, however, by the cooling trade winds which are continuous for practically all of the year and in the winter by the humid rainy season.

A more detailed discussion of fruit fly conditions in important countries reached by this pest follows.

FRUIT FLY IN SOUTH EUROPEAN AND MEDITERRANEAN COUNTRIES.

Fruit Fly in France.

The fruit fly has been permanently established in the Mediterranean or Riviera district of France for a half-century or more. The damage varies somewhat from year to year, being more apparent in stone fruits, pears, etc., than in orange. The winter period in this district is fairly long, on account of the latitude (about that of Boston) and the temperatures run pretty low, so that the fly is inactive or in hibernation as larvae, pupae or adults during a long period, and normally becomes injuriously abundant only towards the end of the summer. Under these limitations, the fly population is largely absorbed by its favored host fruits -- peaches, pears, etc., which are regularly and often seriously injured. Normally the fly occasions only minor damage to the rather limited citrus production of the area. The important grape cultures of South France are not injured, and it is well known that, while the fruit fly may and does occasionally breed in grapes, important or commercial injuries to this type of fruit are unusual.

The particular interest as to France is the record of the outbreaks of this fly in important peach and prune areas in the neighborhood of Paris (latitude of Newfoundland). An important outbreak of this pest in this region in 1900 is re-

corded, when very considerable crop losses were experienced. Either that this infestation continued in a minor way or that new introductions of the pest were made, is indicated by the record of a similar infestation in 1906 and of the occurrence of this pest again in October, 1914. I have elsewhere indicated that the temperatures of Paris, winter and summer, are lower than the corresponding mean monthly temperatures of important towns in the Cotton Belt, including Nashville, Tennessee, Macon, Georgia, and other points to the South. The indication that this gives of the distinct risk to the fruit cultures at least of the Cotton Belt States is perfectly clear, particularly in view of the much longer as well as warmer summers in these States, as compared with France.

Fruit Fly in Spain.

Spain is subject to climatic conditions, elsewhere discusses, not altogether favorable to the fly. Spain is further fortunate in that her great orange crop of the general Valencia-Murcia district ripens in December and January when the fly is at its lowest ebb of activity and finds at that period its principal market in England and middle Europe. The fly, while present during this period, is inactive on account of the low temperatures and only a slight percentage of infestation occurs. It is this condition which gives Spain her opportunity to move the bulk of her citrus crop successfully. On the other hand, the small portion of the crop which is left on the trees, more particularly to supply the local markets of spring and summer, becomes, as the season advances, heavily infested, eventually often 100 per cent.

The following notes and records will assist in giving a better understanding of fruit fly behavior in Spain, more particularly as affecting the orange crop elsewhere than in the Valencia district.

For a considerable period, permission was authorized for the entry of a type of orange from southern Spain (Seville) for manufacture of marmalade at factories in New York State on condition that the fruit would be so carefully selected that it would not be infested with fruit fly. After a short trial, this permission had to be withdrawn because of the high degree of infestation which was found in such fruit, evidently resulting from the fact that, for the manufacturing purpose involved, it had to be well colored and hence well ripened, giving the maximum opportunity for infestation. By inspection the condition of this fruit could not be determined with any accuracy, as was exhibited by the subsequent inspection that was made of it during the time it was being utilized at the factory. The following paragraph taken from a report submitted by Inspector C. E. Cooley, January 27, 1925, indicates this situation:

"I spent, in all, about a half-hour examining the oranges as they were being sorted and quartered in the first room, and discovered only one live larva of Ceratitis capitata and one pupa, badly crushed, which appeared to be that of the fruit fly. However, the most striking feature, to me, developed in this investigation, was the fact that with only a few moments' examination, 5 live larvae of the fruit fly were found in the oranges which had already been sorted; were on the tables where the skins and pulp were being separated; and which, although apparently per-



fect outwardly, were being discarded into a basket by the girls when the pulp showed a considerable rotted condition. All this taking place in the processing room, being maintained at a temperature above 60 deg. F. In fact, after a few minutes, the girls were beginning to pick out specimens of live fruit fly larvae and giving them to me. Mr. Cottam at this time instructed the forelady to have these discarded fruits removed to the boiler room at the close of the day and burned."

The conditions during the last shipping season in Spain, 1929-30, are indicated in letters from Dr. H. J. Quayle of December 3 and December 25, 1929, quoted in part below, covering a survey conducted between November 19-25, 1929.

"December 3, 1929. Advised that the injury ranges from 1 to 10 per cent -- from his own examination, nearer 1 than 10. Flies still present, but owing to cool weather doing very little egg laying. "Many oranges are stung but they are eaten before -- or shortly after -- the larvae do any important damage." * * * "Oranges are being harvested and shipped in great quantities."

"December 25, 1929. Referring to 3 days spent in the vicinity of Murcia, where the temperature is a little warmer than it is in Valencia, and there is a considerable acreage of apricots and other deciduous fruits, Quayle reports "no great difference in the fly population or in the number of infested fruits", as compared with Valencia. Speaking of the Valencia district, including Murcia, he says: "I have been in the field nearly every day since arriving here and there has been no time when I couldn't find flies if I looked long enough. The thermometer registered at freezing for a few hours one night but I found flies on the sunny side of an occasional orange tree the next day. The weather has been dry and generally warm during the day and this accounts for the flies still occurring on the trees. If the usually cold and rainy weather had occurred the flies would have disappeared by this date." * * * "From my own observations and what I have been able to learn from others, the adult flies disappear for the winter, under the conditions here, in December, and, if the weather is fine, as this year, a few may persist into January. So far as I have been able to determine, there has been no egg-laying for the past two or three weeks and I have found no fruits with young larvae. During the same time no eggs were deposited in fruits for the purpose that were placed in the insectary."

This statement gives a very good picture of the fruit fly conditions in December January, during the period when the main citrus crop of Spain is ripening and being marketed, and indicates the reason why this, the important Spanish fruit crop, marketed in these months, suffers very little from the fly.

Fruit Fly in Italy

In general, the climate of Italy is very much less favorable to the fly than it is in Florida and probably in the warmer portions of the Cotton Belt. It becomes cold enough very often over most of Italy during the long winter season (latitude of New England) to stop fly activity, even as far south as Sicily, for a period of several months. At Naples the fairly extensive orange orchards are protected from frost by temporary sheds of brush on high supporting poles, maintained each winter. Considerable damage to miscellaneous other fruits from midsummer on is a common thing, however, in southern Italy and especially in Sicily, and this is true also, at the end of the season, as to oranges, especially when they become fairly well ripened.

Some notes regarding infestation in Italy follow:

In Bulletin No. 134, U. S. Department of Agriculture (1914), on page 4, H. J. Quayle writes:

"When the writer returned to Sicily on the first of August such ripe oranges as were still on the trees or on the ground were heavily infested with the fruit fly. Indeed, no oranges could be found that were either not infested or did not show punctures."

The following is quoted from H. J. Quayle's letter of August 9, 1913, to Dr. C. L. Marlatt at the time Chairman of the Federal Horticultural Board:

"I arrived in Palermo a week ago and have found plenty of Ceratitis in oranges and peaches, and to some extent in pears and plums. I happened to find one place where about 90 per cent of the oranges, mostly on the ground, are infested."

Up to recent years, importations of well-ripened bitter oranges from Sicily were permitted to enter at the port of New York for immediate shipment in bond to Canada, chiefly for the manufacture of marmalade. On account of the serious infestation of this fruit with the fly, it becomes necessary to rescind the permission to move such fruit in bond by rail from New York to Canada. The two attached letters indicate the condition of shipments of selected fruits.

February 9, 1928.

Mr. Romolo Angelone,
Commercial Attache, Italian Embassy,
2700 Sixteenth Street, N. W.,
Washington, D. C.

Dear Mr. Angelone:

Your letter of February 8 (1514) referring to a shipment of five hundred cases of Italian bitter oranges, which recently arrived on the SS Carnia for I. T. Shipment to Canada, has been received. Although you do not so indicate, I presume you are aware of the fact that this shipment was found to be heavily infested with the Mediterranean fruit fly, one of the most injurious fruit insect pests known. Not only were larvae taken from the fruit, but adults in great numbers were found flying in the hold of the vessel. Fortunately, this insect does not occur in this country, and hence, every precaution is being taken by this Department to prevent its establishment here.

Prior to the arrival of the shipment, a permit was granted, authorizing the immediate shipment of this fruit in bond, by rail, to Canada. This permit, however, was granted on the condition that the rail shipment to Canada was contingent upon apparent freedom of the fruit from infestation by the Mediterranean fruit fly and other injurious insects. The finding of this insect in such large numbers makes it necessary to require the shipment of the oranges out of this country immediately, and if this fruit proceeds to Canada, it must go by all water route. To effect the shipment by this method, Mr. Freeman has been authorized to permit the transfer by lighter, of the infested fruit, under such safeguards as he may prescribe, from the SS Carnia to the vessel proceeding to Montreal.

To add to our difficulties, we have just been advised that the SS Carnia will shortly proceed to Philadelphia to discharge cargo, later returning to Italy via New York.

From the standpoint of infestation, the shipment in question represents one of the most serious pest risks which has developed in connection with the entry of fruit in recent years. In view of this condition and the risk which evidently accompanies shipments of Italian bitter oranges, this Department can no longer issue permits authorizing the entry of Italian bitter oranges for shipment in bond by rail to Canada.

Very truly yours,

(s) C. L. Marlatt,

Chairman of Board.

January 31, 1925.

Report of Inspection of Sour Oranges ex S. S. Saucon.

This examination was made on Milton Street Pier, Brooklyn, January 30, 1925. The material examined was a lot of 100 cases of sour oranges in bond to Montreal, Canada, entered by Bridgetts & Company, entry Exp. 86835, permit 372, marked A 1 Matteo Maniscalco Palermo; origin, Palermo, Sicily. The steamer carrying this material left Palermo on January 8 and arrived in New York January 27. The fruit was carried in an ordinary air-ventilated hold, the steamer carrying a cargo of about 17,000 cases of Sicilian lemons in addition to general merchandise from Mediterranean ports.

Only one box was opened for inspection. In this box were found 18 actually infested oranges, 14 of which were dissected and larvae removed, and the other 4 submitted as live material for rearing. The latter 4 were not cut open but sent in intact. In the 14 dissected here were found 85 live larvae, ranging from very small, about an eighth of an inch long, to full grown. All were alive and active. From 2 to 18 were found in a single orange. In addition, 2 live larvae, 5 pupae, and 1 empty pupa case were found adhering to the paper and bottom of this box. Assuming that the four oranges submitted contain the average number of larvae, this one box had a Mediterranean fruit fly population of 109 larvae and pupae, and if this same average continued for the entire 100 cases, it would make 10,900 Mediterranean fruit flies for the shipment. The oranges were packed 200 to the case, all of which were examined in the one case opened. This makes an actual infestation of 9 per cent of the oranges in this case. The oranges in this case were of a very big grade, having the rich reddish orange color of fully ripened fruit, which had hung a long time on the tree. The larvae were found in oranges which had an externally normal appearance, but which had a spongy, light feeling. Some showed prominent exit holes. This box of 200 contained only three decayed oranges, none of which were found to be infested.

The material was submitted as follows:

- 4 undissected oranges for rearing.
- 1 vial with the larvae and pupae found on packing.
- 1 vial with 86 larvae taken from the oranges.
- N. Y. interceptions 5468 and 5469.

E. Kostal.

Wm. H. Freeman,
Chief Inspector.

A note submitted by the New York Inspector relative to the shipment discussed in the attached letters is of interest:

"The oranges were inspected during one of the coldest spells of the present winter. On February 6 when examination was made the official outside temperature ranged from 18 degrees Fahrenheit at 10 A.M. to 25 de-

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degrees Fahrenheit at 1 P.M. In the ship's hold, due to the natural heat generated by the fruit, the temperature was at about 55 degrees Fahrenheit (estimated). However, live flies were found on the dock that same afternoon. The temperature inside the dock shed was kept slightly above freezing in order to protect perishable cargo."

Such infestation was practically a continuing feature, as shown by examinations of succeeding shipments.

Fruit Fly in Madeira Islands (Portugal):

The following is an excerpt from the Review of Commerce and Industries for the quarter ended September 30, 1929, submitted by the American Consul, J. F. Huddleston at Funchal, Madeira Islands, to the Secretary of State, dated October 10, 1929:

" At one time Madeira produced very good oranges in considerable quantities but the Consulate is informed that fruit fly discouraged farmers from further attempts to raise citrus fruit here, and orange growing on the Island has practically disappeared."

Fruit Fly in Greece.

From the American Consul, C. E. Cooke, Patras, Greece, November 27, 1918, in a report sent to the Secretary of State in accordance with telegraphic circ; Inst., Oct. 19, 1918:

"The Patres consular district has been visited again for the third successive year by the Mediterranean fruit fly (Ceratitidis capitata), which has committed terrible ravages among the orchards and gardens throughout the district. It has attacked apricots, citrons, mandarines, nectarines, oranges, pears, peaches, plums, among orchard crops; and among garden crops, eggplant, narrows (vegetable), melons, tomatoes. Even lemons, which in past years have been immune, have been attacked to some extent this year. The losses in the above crops due to this fly have reached 80 per cent in some parts of the district, with an average of 60 per cent for the whole district. Most of the fruit fell before maturity in a rotting condition, and such as remained on the trees or plants was found infested with the larvae of the fly.

"The losses will have little direct effect upon the export trade of this district, as practically the only fruit concerned which enters into that trade is the citron, which has in past seasons been shipped in moderate quantities in brine to the United States. The loss of these crops will be keenly felt, however, among the people at this time when there is such shortage in foodstuffs."

From the American Consul, A. B. Cooke, Patras Greece, Dec. 6, 1913, in a report to the Secretary of State.

"The tangerine crop was practically a failure, owing to the ravages of this fly. Most of the fruit fell before maturity; and such as matured and was brought to the market was infested with the maggot of the fly. The orange crop also suffered severely, great part of the fruit falling before maturity and the remainder being of inferior quality. The peach and pear crops were a failure, very little of this fruit even reaching the market."

Fruit Fly in Other Mediterranean Countries and Islands.

A few records are appended to indicate conditions in the Mediterranean and countries to the south.

Fruit Fly in North Africa

Mr. Chas. P. Lounsbury, Govt. Entomologist of the Cape of Good Hope, in an article on the Mediterranean fruit fly in Agricultural Journal, Cape of Good Hope, vol. 27, 1905, p. 311, quotes a letter from a Mr. Bioletti. "Mr. Bioletti, until recently was horticulturalist at the Elsenburg Agr. College, and when he wrote in December last, he had just completed a tour through French and Algerian fruit districts. He said: 'Algeria ought to be a good place for fruit growing but the fruit fly makes it impossible to grow any but the earliest varieties and there only in a few localities'".

Fruit Fly in Algiers and Tunis

The following from an article by L. Guillochon entitled "LePecher dans le nord d'Afrique" (The Peach in North Africa) has been translated by Mr. H. B. Shaw from La Vie Agricole et Rurale, xxix: 52, pp. 407-408, Paril, December 1926.

"In the course of a mission in Algeria and Tunis, entrusted to me in 1912 by the technical Commission of Experimentation of the Director General of Agriculture, Commerce and Colonization of Tunis, I demonstrated that the culture of the peach was limited to the production of early varieties of peaches and that the exportation of this fruit was almost, or entirely, non existent.

The purely local sale was caused by the almost exclusive culture of early varieties called "Soft", whose fruits, which ripen from June to early July, thus escape the ovipository period of the females of Ceratitis capitata and whose texture and watery character do not admit of transportation for several days, even with the most favorable packing conditions.

As opposed to "Soft" peaches are the "Hard" peaches produced in California for canning. This second class of peach is

not too watery, thus permitting their skinning by machine, the flesh of the fruit being preserved entire without assuming a mushy consistency in the preserving liquid.

"Unfortunately these varieties are late here; they do not ripen until August and September, are invaded by the fruit fly, and are useless on that account.

"To my knowledge at least, these conditions of sale have not changed since 1912 and the trade in peaches remains local for the reasons which have just been indicated."

Fruit Fly in Palestine

The following is quoted from Dr. F. S. Bodenheimer in the First Report 1921-6, November, 1926, Zionist Organization, Institute of Agriculture and Natural History, Agricultural Experiment Station, Palestine:

"The climatic conditions are so different in various parts of Palestine, that special research is necessary in each. This is demonstrated in the life history of the Mediterranean fruit fly (Ceratitidis capitata), the most serious pest of oranges and of deciduous fruits, which in the coastal plain has 7, near Jerusalem 5, and in the Jordan Valley 10 generations per annum."

Fruit Fly in Cyprus

The following is quoted from D. S. Wilkinson, in the Cyprus Agricultural Journal, vol. XI, part 1, January, 1925, pp. 9-10.

"Ceratitidis capitata, Wied., is recorded from oranges, tangerines, figs and apricots from all over the Island, and causes great damage."

FRUIT FLY IN OTHER COUNTRIES

Fruit Fly in South Africa

The following is quoted from an article by Chas. P. Lounsbury, Government Entomologist, entitled "Natural Enemies of the Fruit Fly" which appears in The Agricultural Journal of the Cape of Good Hope, Vol. XXVI, No. 1, January 1905, p. 84:

"Fruit flies are the greatest pest to fruit that we have in South Africa. The principal species, Ceratitidis capitata, blows nearly all of our Cape grown fruits, though some kinds much more commonly than others. In some parts of the Colony few peaches escape the attack, and often most of the soft fruits maturing after about Christmas get blown. The pest varies in abundance from year to year, and, in general, probably owing to the greater prevalence of wild fruits, is worse in eastern sections than in western."

The fight against this pest in South Africa has been a continuing one for some 25 years, and the sweetened bait remedy, I believe, originated there and has been the main reliance for control. The bulletins issued by the Department of Agriculture of the Union of South Africa indicate, however, the necessity for spray-

ing every 7 to 14 days throughout the period when fruit becomes attractive to the/ until it is harvested, involving the cost of many applications throughout the season. As is normal, the citrus fruit, particularly oranges, suffers less than stone fruits and also apple, pear and quince, but as elsewhere practically all fruits are subject to serious attack. Even under this treatment, 25 per cent or more of the fruit is commonly lost and a good deal of the fruit shipped is also maggoty, as interceptions of such fruit at ports of the United States have clearly indicated. Sterilization by refrigeration was attempted but failed, apparently because it wasn't realized that to effect killing of larvae it was necessary to carry the fruit two or three degrees below the freezing point of water. The fruit, however, was subject to a fairly low degree of refrigeration, namely, between 32 - 34 degrees Fahrenheit. As indicated in an official report, fruit held at such temperatures for a period of six weeks and thereafter shipped under refrigeration to England yielded numbers of flies after arrival at destination. Fruit fly conditions in portions of South Africa are comparable to those in Florida, but in fruit abundance particularly, and also in variety, the conditions are apparently less favorable than in Florida.

Fruit Fly in Australia.

The distribution of the fruit fly to the remote points of the world, like Australia, is due to the great improvement of facilities for carrying fresh fruits on shipboard under refrigeration. In connection with such fruit, probably from South Africa, this pest was introduced in Australia some time shortly prior to 1897. It was noted in that year in Western Australia and the following year in New South Wales, later reaching Victoria, South Australia, and Tasmania. In latitude this general region corresponds to our Gulf States and Florida, Tasmania having the latitude of 40 to 44 degrees South. The fly also obtained, probably independently, at least a temporary foothold in the North Island of New Zealand. In New South Wales this pest has been particularly disastrous to fruit productions, and even in Victoria, farther south and hence in a cooler climate, its damages have been heavy, as indicated by the following paragraph quoted from the Government Entomologist of Victoria, 1907:

"This terrible scourge (the Mediterranean Fruit Fly) of the fruit grower is becoming but too familiar in Victoria, the larvae having been found in peaches, pears, quinces, apricots, plums, nectarines, bananas, guavas, oranges, lemons, apples, citrons, loquats, mangoes, pumpkins, tomatoes, pineapples, and persimmons; so that it will easily be seen that hardly any fruit can be said to be exempt from its attacks, and of all the fruit grower's enemies the fruit fly is undoubtedly the worst."

A similar official report from Western Australia (Department of Agriculture, 1924) includes the statement:

"The fruit fly is undoubtedly the worst pest we have to deal with in this State. In 1914 the ravages of this fly were so widespread that it became a question of who was to exist -- the growers or the fly."

Illustrations are given in this bulletin showing heavily infested apples, pears, quinces, peaches, oranges, loquats, passion fruit, grapes and even seed pods of roses.

FRUIT FLY IN BRAZIL

The fruit fly was introduced into Brazil certainly 25 or 30 years ago, and perhaps much earlier. Mr. C.P. Lounsbury, Government Entomologist of Cape of Good Hope, who visited Brazil in 1905 particularly for the purpose of possibly securing parasites there to establish in South Africa, in a report to the Agricultural Journal of the Cape of Good Hope of 1905, makes the following statement concerning fly conditions in Brazil:

"The fruit fly of South Africa, Ceratitidis capitata, is a very severe pest in the States of Rio de Janiero and Sao Paulo, and probably in other parts of Brazil where peaches are grown; practically all of the fruits allowed to mature on the innumerable peach trees in the States named nearly every year become infested by maggots, and this species of fly is believed to be the only one chiefly implicated."

In Brazil, as in other countries, the fruit fly evidently exhibits a very distinct preference for peaches and other stone fruits, and the coffee berry, which there as in Hawaii is perhaps one of its most favored hosts. Of citrus fruits, the grapefruit is most severely attacked; and oranges, ripening as they do in the winter season, are comparatively little attacked until they are well ripened so that the crop, as in Spain, can be shipped with comparatively a small percentage of infestation and loss.

FRUIT FLY IN HAWAII.

The fruit fly was introduced into Hawaii in 1910 as a result of an infested ship from New South Wales coming into the harbor of Honolulu. No fruit was landed, but the flies had developed numerously from ship's shores and were flying about in the ship, and some of these made the short flight from the shore to fruit which was abundant throughout the city and suburbs. A few months later the infestation was quite general in the city and within three or four years it had extended throughout the Hawaiian Islands.

The climate of Hawaii is peculiarly favorable to the fruit fly, except that during the winter period there is a great reduction, due to the rainy season and so some scarcity of favored host fruits. Some recent statements have been made about Hawaii, which evidently are based on a misinterpretation of conditions as they appear during this rainy season.

An effort was early made by the authorities and persons in interest in Hawaii to control this pest by introduction of parasites. Such introductions were successfully made, and a very considerable parasitism has resulted, of which careful statistical record has been kept since 1915. These records are based on miscellaneous collections of fruit obtained each year from 30 to 50 or more different localities in the Islands, and involve, for the period, examination of many hundreds of thousands of fruits. The amount of infestation of fruit has been fairly uniform

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in spite of the parasitism, which frequently reaches, in favorable types of fruit, 50 per cent, or more, of the maggots. The enormous fecundity of the insect, however, prevents even that amount of parasitism from very much, if any, affecting the average yearly percentage of maggots per fruit. For example, an examination of upwards of 100,000 Chinese oranges collected during the last three-year period (1922-24), covered by the latest fully tabulated report, indicates an average of 2.4 maggots per fruit. Similarly, the peach showed an average of 18.4 maggots per fruit for the same period, and the fig 5.1 maggots per fruit, etc. The nine-year average for these same fruits is, for the orange, 6 maggots per fruit, but for the peach and fig the same as the three-year average, and with other fruits a similar uniformity is shown.

The fully tabulated records for the three-year period for 1925-27 have not been submitted, but brief monthly statements have been received. As indicating the situation for the latter half of the year 1929, the following record of fruit infestation by months is reproduced:

Month, 1929	: No. of Lots	: No. of Fruits	: No. of Larvae	: Average No. of
	: Collected	: Examined	: Found	: Larvae per Fruit
June	51	5,920	16,563	2.8
July	44	4,186	23,666	5.7
August	51	4,157	13,871	7.7
September	47	4,680	19,783	4.2
October	44	3,371	15,683	4.7
November	56	4,573	18,683	4.1
December	44	3,614	10,688	2.9

As further indicating fruit fly conditions in Hawaii, the following is quoted from Bulletin 640 of the U. S. Department of Agriculture published April 3, 1916, and based on records made by the Department's investigators in Hawaii.

"In tropical and semitropical climates this fruit fly is capable of becoming a pest of prime importance and, as in the Hawaiian Islands, may be classed as the most important insect check to horticultural development.

"This list shows that practically all the ordinary useful and edible fruits in Hawaii are infested heavily. Thus peaches can not be grown at present, for they are ruined before they become well grown; Chinese oranges, tangerines, figs, loquats, rose apple, many varieties of mangoes, certain avocados, guavas, coffee cherries, star apples, sapotas, persimmons, apples, pears, plums, nectarines, and quinces -- all these are badly infested." The bulletin gives a list of 72 host fruits of the insect recorded in Hawaii.

The nearest approach on the east of the Mediterranean fruit fly to the United States, prior to the infestation in Florida, was in the Bermuda Islands. This infestation apparently dates from 1865, when a vessel carrying a cargo of fruit from the Mediterranean regions was forced by a storm to discharge this fruit in Bermuda. Finding a favorable climate, the fly multiplied and very shortly put an end to what had theretofore been very promising fruit production possibilities, particularly as to the peach, which had been grown generally on the island and had been an important export. Some little effort was made to eradicate it, but with no thoroughness and no lasting benefit. It is understood, however, that interest in possible eradication has been aroused by the effort now under way in Florida. It would seem to be unquestioned that such eradication could be accomplished in Bermuda under its insular condition and limited area.

Following are extracts from two publications regarding fruit fly conditions in Bermuda. Col. W. R. Winter, in a bulletin entitled, "The Fruit Fly", published by the Bermuda Department of Agriculture in 1913, says:

"With the exception of a few isolated cases, it has for many years been found impossible to grow perfect fruit in Bermuda; especially has this been the case with loquats and peaches: the latter are, even with the most primitive cultivation of excellent quality, and except for fruit fly, it would be an easy matter to produce enough for the requirements for the whole of these islands. Since the advent of the fruit fly, however, these fruits in conjunction with others, a list of which follows, have been practically destroyed by the rot which sets in as soon as the fruit is punctured and the maggots begin to feed, and the inhabitants have been deprived of a most valuable and necessary article of diet."

Colonel Winter then gives a list of 45 fruits attacked by the fly.

In an article appearing on pp. 289-290 of the Bull. Ent. Research, Vol. XVIII, 1928, London, England, Lawrence Ogilvie says:

"Peaches which formerly grew in great abundance in the island were rendered unproductive and loquats, sapodillas, Surinam cherries, peppers, and to a lesser extent, citrus, papaws, sugar-apples and guavas were severely infested."

Fruit Fly in the Canary Islands.

From a report of expedition to Africa in search of the natural enemies of fruit flies, Bulletin No. 3, Division of Entomology, Territory of Hawaii Board of Agriculture and Forestry, p. 13, by F. Silvestri, the following is quoted:

"On the morning of July 30, 1929....I profited by the occasion to land and visit the fruit markets. I found these well supplied with peaches, pears, grapes and prickly pears, and among the ripest of the peaches I at once noted a number infested with Ceratitis capitata. I learned from the fruit vendors that the infestation sometimes becomes very severe, particularly later in the season, and that in September the prickly pears are also affected...."

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The following is quoted from "Report on an Inspection Trip to the Canary Islands, 1927" by Max Kisliuk, Jr., pp. 3 and 6, submitted to Dr. C. L. Marlatt, Chief, Federal Horticultural Board.

"Considerable oranges are grown in this (Telde, Gran Canaria) neighborhood. They are said to be heavily infested with Ceratitis capitata which affects the keeping quality and market in England.... I observed a few orange trees on which the fruit and some of the leaves were literally covered with Ceratitis capitata adults."

Fruit Fly in Madagascar

The following which appears on p. 133 of Vol. 8 (1920) of the Review of Applied Entomology, London, England, is from a review of an article by J. Legendre on pages 8-9 in C. R. Soc. Biol. Paris LXXXIII No. 1, (Jan. 1920).

"Ceratitis capitata (Mediterranean fruit fly) is reported to cause serious injury to peaches in Madagascar, the damage amounting to about 80% of the total crop in January and even more in February. Each fruit may contain as many as six or seven larvae".

THE FOLLOWING SECTIONS

WERE PREPARED IN THE

OFFICE OF THE PLANT

QUARANTINE AND CONTROL

ADMINISTRATION.

III. - SUMMARY OF PROGRAM OF ERADICATION

The fundamentals of the program of eradication of the fruit flyfall under three major heads: A. Facts as to conditions of infestation; B. Prevention of spread from infested areas; C. The eradication from areas infested.

A. FACTS AS TO CONDITIONS OF INFESTATION.

This work involves a careful and detailed inspection of host fruits and vegetables in the area infested or believed or suspected to contain infestation.

The very rapid disclosure of the presence of the fly over a large part of the central portion of the peninsular section of Florida justified the suspicion that infestation occurred widely within the State. The entire State was placed under quarantine. The large amount of fruit which had been moved interstate, prior to discovery of infestation, from areas found to be infested--especially the movement of fruit in bulk to the southern States--placed suspicion on other areas.

The field scouting to determine presence or absence of the pest is therefore essential. The nearer we reach the goal of eradication the more intensive such inspection should be. This inspection work is of the greatest importance as it is imperative that we know the conditions as to infestation.

Since the discovery of the fly in Florida inspections have been carried on over the entire State and parts of the area have been inspected a number of times. The impossibility of examining all host fruits and vegetables; the impossibility of determining--without practically complete destruction of the host--the presence of eggs or larvae within the host and the short life cycle of the fly make it necessary to continuously reinspect areas where infestations have been found or are suspected to exist. Approximately \$600,000 have been expended for field inspections in Florida. This work should be enlarged.

When it was known that the fruit fly existed in Florida host fruits and vegetables which had been sent into the southern States, as well as some shipments which had been sent into northern States, were inspected to determine possible infestation. Following this, intensive field inspections were made in the southern States of host fruits and vegetables throughout the season.

As a result of the inspections of citrus fruits which had moved interstate from areas where infestation was found, 16 lots of infested fruit were located and promptly destroyed. In addition to this three adults were collected in a store at Raleigh, N. C. Following this discovery there was an intensive cleanup of the premises and poison bait spray was applied to the foliage of a considerable area.

The following table gives the locations outside of Florida where the fruit fly or fruit infested with the fly has been found:

<u>State</u>	<u>Locality</u>	<u>Number of Lots</u>
Arkansas	Little Rock	4
Georgia	Ocilla	1
"	Ashburn	1
"	Valdosta	1
Louisiana	West Monroe	1
"	Shreveport	2
North Carolina	Greensboro	1
"	Raleigh	3 adults
Texas	Dallas	1
"	Fort Worth	1
Ohio	Columbus	1
New York	New York	2
7	12	16 lots, 3 adults

B. PREVENTION OF SPREAD FROM INFESTED AREAS.

To eradicate the pest and to protect uninfested regions it is necessary to prevent it from invading new areas. To do this requires safeguarding and controlling the movement of host fruits and vegetables or other articles likely to carry the pest into new locations. It involves controlling even the local movement of such articles. It necessitates the maintaining of road patrols, (1) surrounding known infested areas and (2) at the border of suspected areas. In short it requires the enforcement of quarantine regulations and the inspection and certification of restricted articles. For such work there has been expended in Florida approximately \$778,000.

C. THE ERADICATION FROM AREAS INFESTED.

The eradication of the fly from areas in which infestation has been found involves three separate lines of work, as follows: (1) The destruction of eggs or larvae within infested hosts; (2) the killing of adults by artificial means; and (3) the maintaining of a period during which there will be no hosts in which the insect can breed.

1. The destruction of eggs or larvae within infested hosts.
When the fruit fly was first discovered in Florida large quantities of fruit containing eggs and larvae--certain fruits contained as many as eighty full grown maggots--were found in many orchards, especially those in the vicinity of Orlando. The impossibility of determining infestation by inspections alone made it necessary to destroy fruit that occurred on properties or in areas where infestation had been found. Because of the general distribution of infestation and the need of destroying all immature stages that occur within host fruits and vegetables, the original quarantine provided for the establishment of infested zones covering an area of a mile in all directions from the infested property.

All host fruits, wild and cultivated, and all host vegetables within these zones were to be destroyed or processed or treated in a manner satisfactory to the inspector as soon as possible after the discovery of the infestation. No host fruits or vegetables were permitted to develop to susceptible stages of maturity or remain within such zone, and no host vegetables could be planted in such zone until after it had been determined that infestation had been eliminated. This program necessitated the destruction of host fruits and vegetables over considerable areas and prohibited the development of commercial crops.

The determination of the possibility of preventing spread of infestation by the development of means for sterilization made it possible to modify these requirements and in the revised quarantine, effective September 1, provision was made for the interstate movement of host fruits and vegetables from properties on areas which were not determined as infested. The revised quarantine also very greatly reduced the area over which host fruits and vegetables would be destroyed in event an infestation was discovered. Only one infestation--that of November 16, 1929--has been found since the promulgation of this new quarantine. Under the revised program fruit from only approximately seven acres has been destroyed.

2. The killing of adults by artificial means. To prevent infestation of host fruits and vegetables it is essential that all adults be killed prior to disposition of eggs. The soil in the infested groves contained large numbers of pupae--more than 2,000 pupae were collected under one Surinam cherry bush--which would produce adult flies. Adult flies do not lay eggs until four or five days after emergence. During this period they feed on fruit juices, sweets, etc. To kill them before they deposit eggs sweetened poison was distributed, by means of spray, to the foliage of trees in groves and in adjacent properties. Because of the absence of fruit and other suitable food in these areas adults fed greedily on the poisoned bait spray. The application of this poison bait spray has been one of the most effective means of reducing the fly population.

3. The maintaining of a period during which there will be no hosts in which the insect can breed. The life cycle of the fly varies greatly, depending largely on temperature conditions. The removal, over a sufficiently long period, of host fruits and vegetables susceptible to attack by the fly would serve to eliminate the fly by starvation. To make use of this very important means of eradication there was established a nonhost period during which no fruits or vegetables were allowed to develop to a stage susceptible to attack by the fly. This nonhost period is enforced over much larger areas than those in which infestation had been found.

The original quarantine required the destruction of all host fruits and vegetables within infested zones two miles in diameter (Zone I). It also required the maintenance of a nonhost period from May first and continuing for about six months over a larger area known as Zone II or the protective zone. This protective zone extended nine miles beyond the margin of the infested zone.

In this protective zone the following requirements were imposed: (1) Prior to the beginning of the nonhost period all ripe or ripening citrus fruits were to be removed from the trees; (2) no host vegetables which could develop to a stage susceptible to infestation could be planted during the period; and (3) no host fruits and vegetables of any kind could reach a stage susceptible to infestation.

The revision of the quarantine, effective September 1, 1929, established an eradication area which included areas designated, in the original quarantine, as infested and protective zones. This edition of the quarantine made provision for the movement of host fruits and vegetables from the old areas previously designated as infested. It required the maintenance each year of a nonhost period within the eradication area beginning for citrus and other host fruits on April 1 and for host vegetables June 15, and continuing until October 1. During the host-free period no host fruits or vegetables were permitted to grow or exist (except in storages) or to be moved from eradication areas except those in such stages of immaturity as to not be susceptible to infestation. Because of the uncertainty of infestation in points outside of the eradication areas it has been necessary to require that the harvesting of the commercial citrus crop be completed prior to April 1. Immediately following the harvest all drops and over-looked fruit have to be removed from commercial citrus properties.

To carry out this starvation period required the cleanup of fruit susceptible to attack from (1) commercial properties, (2) town and city properties, (3) deserted groves, and (4) uncultivated lands. It also necessitated the inspection of commercial groves to determine if (1) all fruits had been removed from the trees and (2) if all drops and culls had been picked up and destroyed.

For those phases of the work dealing only with the eradication of the fly from infested areas there has been expended approximately \$2,722,000. Of this amount approximately \$898,000 has been for spraying, approximately \$1,675,000 for cleanup and the maintenance of the non-host period. In addition \$149,000 was expended for equipment used in spraying and cleanup work.

IV.- FUNDS APPROPRIATED OR MADE AVAILABLE FOR WORK ON THE
MEDITERRANEAN FRUIT FLY.

A.- FUNDS MADE AVAILABLE BY FEDERAL GOVERNMENT.-

Summary.- 1. \$40,000 transferred from existing appropriations
and partly expended.
2. Made available by Public Resolution No. 1
71st Congress - - - - - \$4,250,000
3. Appropriated by Public Resolution No. 29,
71st Congress - - - - - 1,290,000
Total made available by direct
Congressional action - - - - - \$5,540,000

1. Immediately (April 10) following the confirmation of the occurrence of the Mediterranean fruit fly in Florida the Department, under the authority for the interchange of appropriations included in the Act making appropriation to the Department for fiscal year 1929, authorized the transfer of \$40,000 from the item "Control and Prevention of Spread of the Pink Bollworm," Salaries and General Expenses, Plant Quarantine and Control Administration, to the item "General Administrative Expenses" of the same Bureau. This transfer was possible, without interfering with necessary work on the pink bollworm, because of an unexpended balance--which would have reverted to the Treasury--of the \$200,000 appropriated by Public Resolution No. 12 of the 70th Congress and available for work on the pink bollworm for fiscal years 1928-29.

The availability of these funds made it possible for the Department to begin work immediately. Approximately \$32,500 of the amount transferred was expended before the \$4,250,000 were available.

2. On April 24 the President transmitted a message to Congress (House Document No. 7--Exhibit IV-A) proposing legislation which would make available \$4,250,000 of the unexpended balance of the \$5,000,000 appropriated for the establishment and enforcement of non-cotton zones carried in the Second Deficiency Act for the fiscal year 1928. The President's proposal was promptly considered and on April 26 the House passed a joint resolution, (H.J.Res.56), introduced by Representative Wood, carrying out the recommendation of the President. This resolution was passed by the Senate on April 29 and was approved by the President on May 2. (See Public Resolution No. 1, 71st Congress--Exhibit IV-B).

3. On December 18 the House and Senate passed a Joint Resolution (H.J.Res. 174) appropriating \$1,290,000 to carry on work on the Mediterranean fruit fly. This resolution was approved by the

President December 21, 1929. (See Public Resolution No. 29, 71st Congress--Exhibit IV-C). When H. J. Res. 174 was presented to the House on the 18th it was accompanied by a report of the Committee on Appropriations (See House Document No. 56, Exhibit IV-D).

B.- FUNDS MADE AVAILABLE BY THE VARIOUS STATES.-

1.- Florida.

Summary.-- The following is a summarization of the Florida state funds which have been or may be available for work on the Mediterranean fruit fly, biennial period 1929-31:

1. Emergency fund released by Governor April 15	\$ 50,000
2. Regular biennial budgeted appropriation to Plant Board	559,816
3. Emergency appropriation available by joint action of Governor and Plant Board	100,000
4. Special appropriation for work on fruit fly eradication	500,000
5. Continuing emergency appropriation available to the Plant Board	70,000
Total funds available	\$1,279,816
Of this amount there has been expended to January 31, 1930	\$135,785.80

Immediately on the discovery of the fruit fly in Florida, various State institutions connected with the agricultural activities of the State sent a large number of employees engaged for other work to the scene of action. Later practically all of the State quarantine officers, nursery inspectors, agricultural specialists from the State Experiment Station, and workers connected with the Extension Service were assigned to work on the fruit fly. On April 15 the Governor of Florida made available \$50,000 of an emergency fund. Local communities contributed by loaning equipment and the services of their employees. Certain fruit producing concerns, railroads, and steamboat companies contributed the services and expenses of employees.

On June 7 the Governor of Florida approved an act (See chapter 13639 (No. 129) of General Laws of Florida, 1929) making an emergency appropriation of \$500,000 immediately available for the extermination of the Mediterranean fruit fly in Florida.

In addition to the above, the Florida Legislature at the 1929 session made the following appropriations which were wholly or in part available for work on the fruit fly:

(a) Emergency appropriation, available by joint action of the Governor and Plant Board, \$50,000 for each fiscal year of the biennium 1928-29.

(b) A continuing appropriation of \$35,000 a year, is provided by the Florida Plant Act of 1927, amounting for 1929-31 to \$70,000.

(c) The budgeted biennial (1929-31) appropriation to the State Plant Board, of \$559,316. The Plant Board is authorized to increase or decrease any item in its budget and thereby can, if necessary, devote practically the entire biennial appropriation to work on the fruit fly.

2.- Other Southern States.

Immediately following the announcement of the discovery of the Mediterranean fruit fly in Florida, various southern states mobilized their inspection officers, extension workers, and agricultural specialists to inspect Florida host fruits and vegetables which had been shipped into these states prior to the establishment of the quarantine. Alabama and Georgia promptly placed quarantines against Florida and organized quarantine stations along their state lines. During the last three months of the fiscal year 1929 the Southern states expended about \$60,000 (59,970.29).

Definite figures of all funds expended by the southern and western States in connection with inspections or quarantine enforcement on account of the Mediterranean fruit fly are not at present available.

With the exception of Georgia, Texas and the recent (January) convening in Mississippi, the legislatures of none of the southern states have assembled since the finding of the Mediterranean fruit fly in Florida. In June 1929 the legislature of the State of Texas made available a special appropriation of \$15,000. No additional appropriation on account of fruit fly has yet been made by the legislature of the State of Georgia.

The southern States devoted all of the funds they could spare, from their regular appropriations for quarantine work, to cooperate with the Department in making inspections to detect possible presence of the fly within their States. It is estimated that during the first four months of the present fiscal year they expended, for this purpose, somewhat more than \$67,000.

The State of California made available \$100,000 for additional inspections and quarantine work on account of the Mediterranean fruit fly and small amounts were expended by other southwestern States, especially Arizona.

V. - FEDERAL APPROPRIATIONS REQUESTED.

The President has submitted two estimates to Congress requesting appropriations for work on the Mediterranean fruit fly.

The first of these was submitted on April 24 (see House Document No. 7) and suggested legislation which would make available \$4,250,000 of the unexpended balance of \$5,000,000 appropriated by the Second Deficiency Act, fiscal year 1928, for the establishment and maintenance of a non-cotton zone. This appropriation was approved May 2 (see Public Resolution No. 1, 71st Congress).

The second estimate was submitted by the President, under date of December 9, for \$15,381,000 (see House Document 145--Exhibit V). It covered the period December 15, 1929 to June 30, 1930. On February 1, 1930 the Secretary, with the approval of the Bureau of the Budget, wrote the following letter to the Chairman of the House Committee on Appropriations concerning this estimate:

"Considerable time has elapsed since the preparation of the estimate of \$15,381,000 submitted by the President under date of December 9 for the eradication, control and prevention of spread of the Mediterranean fruit fly, and since a considerable portion of the funds included in this estimate provided for doing a certain type of work which cannot be completed between now and the end of the fiscal year, it is my belief that the Department will best be able to protect uninfested regions and carry out the program of eradication of this pest if the act appropriating funds for this work be worded to make the funds available for the fiscal year 1930 and the fiscal year 1931. If this recommendation meets with the approval of your Committee, unless conditions develop as to the fruit fly which cannot now be anticipated, it will be unnecessary to submit, at least to the present session of Congress, an estimate of funds needed to carry on this work during the fiscal year 1931."

On August 26 the Secretary transmitted a letter to the Director of the Budget requesting that the amount of funds appropriated for work on the Mediterranean fruit fly for the fiscal year 1930 be immediately increased by \$26,600,000. This increase was requested to provide for immediate necessary expansion of the cleanup of non-commercial hosts and the enlargement of other phases of the eradication work. Newspaper correspondents learned that such an estimate had been submitted. The House was not in session at the time this request was submitted to the Budget. It was, therefore, impossible for this estimate to be received for consideration by the legislative section of the Government. This situation made it impossible to make the immediate expansion of the work and we have, in a sense, lost an opportunity to carry on and expand certain features of the program of eradication which at that time were believed to be essential. It is too early to forecast the effect the discontinuance of the cleanup of the non-commercial hosts and failure to expand other phases of the eradication work will have on the success of the eradication effort.

VI
IV. - ORGANIZATION OF WORK

General Statement

The work the Department is doing on the eradication, control, prevention of spread, and investigations of the Mediterranean fruit fly naturally falls into four units which, for the most part, are under the direction of the Chief of the Plant Quarantine and Control Administration. When the work was started, Dr. C. L. Marlatt was Chief of the Plant Quarantine and Control Administration and also Chief of the Bureau of Entomology, and all quarantine and eradication work as well as the entomological phases of the investigations, came--in accordance with Departmental organizations--under his direction. On December 1, 1929, carrying out a plan approved by the Department before the discovery of the fruit fly in Florida, Mr. L. A. Strong was appointed Chief of the Plant Quarantine and Control Administration, and since then he has been in charge of this work. Because of the emergent nature of the work the chiefs of the various bureaus of the Department, which have cooperated in supplying information or advice, have authorized their employees to report direct to the Chief of the Administration on phases of their work dealing with the Mediterranean fruit fly.

The eradication, control, and quarantine work which is done within the State of Florida necessarily had to be carried on in cooperation with that organization, of the State, responsible for regulatory work dealing with plants and plant products^{and}/ authorized to take other actions designed to protect agricultural and horticultural interests of the State. All features of quarantine and eradication work in Florida have, therefore, been in cooperation with the Florida State Plant Board. Dr. Wilmon Newell, State Plant Commissioner, was appointed as an agent of the Department in field charge of the regulatory and eradication work in Florida.

The work in the Southern States, especially those portions dealing with the inspection of host fruits or vegetables, and scouting to detect the possible presence of the fly is carried on with the organization of the State responsible for regulatory work dealing with plants and plant products.

All phases of the work have, therefore, been under the general administrative direction of the Chief of the Plant Quarantine and Control Administration in Washington. Those phases of the work which had to deal with the enforcement of the quarantine in northern States were under his immediate direction. He is also responsible for all administrative matters, including those connected with fiscal and business administration.

Because of the magnitude of the work, it was necessary to establish a considerable number of divisions and place the work falling in each division under the immediate direction of a section or division leader.

The following outline discusses the four major divisions under which the work has been organized. These divisions are as follows:

- A. - Eradication and Quarantine Enforcement in Florida
- B. - Quarantine Enforcement and Scouting in Southern States other than Florida
- C. - Investigations
- D. - Work done in Northern States and Washington Office

A. - ERADICATION AND QUARANTINE ENFORCEMENT IN FLORIDA.

All of the work done under this head was in cooperation with the State Plant Board of Florida and until recently was all under field direction of Dr. Wilmon Newell, acting as agent of the Department. The emergency nature of the work necessitated frequent changes in the organization and recently the eradication and quarantine enforcement in Florida has been reorganized and certain sections of it have been assigned to responsible field leaders who report direct to Washington. Until this recent reorganization there were practically no changes in section leaders. There follows an outline of the organization as it existed during the major portion of the campaign, and an outline of the organization as of February 15.

1. Outline of Organization Prior to Recent Changes.

Wilmon Newell, Agent and Plant Commissioner, In Charge

A. C. Brown, First Assistant

Section of Field Inspection ... M. R. Brown, In Charge

Section of Quarantine Line

Patrol Lt.Col. Preston H. Ayres, In Ch

Section of Cleanup Spraying,

Field Equipment A. F. Camp, In Charge

Supervision of Packing Houses, etc.. C.M.Hunt, In Charge

Section for Permits J. Chapin, In Charge

Section for Identification F. H. Benjamin, In Charge

H. T. Cronin, In Charge Section of Fiscal Administration

The above outline gives only the section leaders. The work was further divided into field districts and sub-districts. The number of districts and sub-districts changed as the situation developed. In December, 1929, there were sixteen district headquarters within the eradication area and six district headquarters in the State outside of the eradication area.

2. Outline of Present Organization.

(a) Federal Fruit Fly Board

This Board was appointed to consider problems of eradication work, entomological and biological questions pertaining to policy, to supervise

and control Federal expenditures made in connection with the eradication effort, and to consider problems of the growers. The Board reports direct to the Chief of the Plant Quarantine and Control Administration. Its membership is as follows:

W. C. O'Kane, Chairman
P. J. Parrott
George A. Dean
W. P. Flint
J. J. Davis

(b) Fiscal Administration

H. T. Cronin - - - In Charge
C. M. Fox - - - First Assistant

(c) Scouting and Eradication Work

Wilmon Nowell, Administrative Officer, In Charge
A. C. Brown, First Assistant
Section of Field Inspection . . M. R. Brown, In Charge
Section of Quarantine Line
Patrol . . . Lt. Col. Preston H. Ayres, In Charge
Section of Identifications . . . F.H. Benjamin, In Charge

(d) Control of Intra and Interstate Movement.

This section deals with the inspection and certification of products moving intra and interstate. It is responsible for the supervision of packing houses, issuance of permits. etc.

W. A. McCubbin, In Charge
Section for Supervision of Packing
Houses, etc. . . . C. M. Hunt, In Charge
Section of Permits . . J. Chapin, In Charge

(e) Supervision of Sterilization by Heat.

L. A. Hawkins, In Charge
Gordon Galloway, First Assistant

B. QUARANTINE ENFORCEMENT AND SCOUTING IN SOUTHERN STATES (OTHER THAN FLORIDA).

The work in the southern States falls primarily into two units. All of it is under the field direction of P. A. Hoidale, with headquarters in Atlanta, Georgia. The work under this heading was done in cooperation with the responsible quarantine officers of the following States: Alabama, Arkansas, Georgia, Mississippi, North Carolina, New Mexico, Oklahoma, Louisiana, South Carolina, Tennessee, and Texas. The following outlines the present Federal organization of this work:

P. A. Hoidale, In Charge
J. W. Patterson, First Assistant
J. M. Worsham, Chief Scout
G. M. Fagan, Chief Clerk in Charge of Fiscal Matters
R. W. Pillsbury, in Charge of Government Property
Section for Quarantine Patrol on the Northern
Boundary of Florida:
Lee M. Gaddis, In Charge
J. H. Goodman, First Assistant.
Section for Scouting and Quarantine Enforcement
within the Southern States:
Comparatively little scouting is done at present
and there is no leader of this section. The few
employees doing work in this section report direct
to the field leader in charge.

C. INVESTIGATIONS.

The Federal investigations are carried on in cooperation with other Bureaus of the Department. Most of the time since the discovery of the fly, and to a greater or less degree at the present time, the field direction of the investigational work in Florida has been coordinated by Dr. A. C. Baker and reported direct to the Chief of the Plant Quarantine and Control Administration. The following outline indicates the Bureau of the Department cooperating in the investigations, briefly describes the type of work carried on, and lists the section leaders.

1. Cooperation with the Bureau of Entomology: - Dr. C. L. Marlatt, Chief.

Investigations on habits, development of fly, determinations of means of control and eradication; investigations on insecticides, fatal temperatures, etc.

(a) Work in Florida.

A. C. Baker, In Charge
Ecological work - - - - W. E. Stone
Physiological work (including trapping) - E. F. Grossman
Insecticides - O. G. McBride
Life History and Habits - C. B. Keck

(b) Work in Hawaii.

A. C. Baker, In Charge
W. W. Yothers
A. C. Mason

(c) Work in Mexico on Related Fruit Flies.

A. C. Baker, In Charge
H. Darby

(d) Investigations in Europe and Africa.

H. J. Quayle (Reports direct to the Chief of the Bureau of Entomology).

2. Cooperation with the Bureau of Plant Industry: - Dr. W. A. Taylor, Chief.

Investigations on the effect of sterilization of host fruits and vegetables; effect of spray and other means employed in eradication on plants; etc.

- (a) Fruit Sterilization and Handling - L. A. Hawkins, in Charge
- (b) Fruit Rots in Relation to Fruit Fly - H. Fulton, in Charge

D. WORK DONE UNDER THE IMMEDIATE DIRECTION OF THE WASHINGTON OFFICE.

This work consists of:

- (1) The administration and fiscal direction of all the field activities of the work on the Mediterranean fruit fly.
- (2) Quarantine enforcement in the Northern States. This involves the inspection of materials in transit to detect violations of the quarantine; the enforcement of the quarantine requirements; the supervision of sterilization, by low temperatures, at designated northern storages; and other phases of quarantine enforcement in the north.

VII. - FISCAL ADMINISTRATION.

General Statement

Immediately after the discovery of the fruit fly in Florida, a qualified fiscal officer, H. T. Cronin (for information concerning Mr. Cronin, see section VIII of this memorandum) was sent to Florida to assume charge of the fiscal work, including purchases and payments of accounts. The work increased in such proportions that it was necessary to send another qualified assistant to work under Mr. Cronin's direction and on April 27 Mr. C. M. Fox (for statement concerning Mr. Fox, see section VIII of this memorandum) arrived in Florida.

Both of these men were designated by the Secretary of Agriculture as temporary special disbursing agents and authorized to make disbursements by check for temporary labor and emergency field supplies. This authorization of the Secretary was administratively curtailed by the Chief of the Plant Quarantine and Control Administration and the payments of the field disbursing officers were limited to payments for temporary field employees. All of these payments were made by Government check. No payments from Federal funds have been made in cash. All payments which have been made are supported by certified vouchers bearing detailed information concerning each payment. The original of all vouchers are on file in the General Accounting Office at Washington, D. C.; a carbon copy of each voucher is on file in the office at Orlando, Florida. This statement applies to each payment, no matter how small the amount.

All vouchers, including those for the salaries of persons under individual formal appointment, are paid by check from the disbursing clerk of the Department of Agriculture in Washington. No payments except for salaries are made by the disbursing agent of the Department until the voucher has been preaudited and approved by the General Accounting Office in Washington. The salaries for personal services are, because of the time element involved, not preaudited, but they are given the customary postaudit by the General Accounting Office. The payrolls for all laborers paid by the special disbursing agent in Florida are forwarded to Washington, given the usual administrative audit in the office of the Administration, and then submitted to the General Accounting Office for audit and the customary approval of the accounts of all temporary disbursing agents.

All general office supplies--such as stationery, pencils, etc.-- were, insofar as the emergency of the situation permitted, secured from the central stores of the Department and shipped to the field headquarters. This plan made it possible to get such supplies at the lowest price possible for volume purchases. From April, 1929, to February 15, 1930, 75,188 lbs. of such supplies, obtained from the central stores of the Department, were shipped direct to the office of the headquarters in Orlando. During the same period, 3,484 lbs. of similar supplies were sent to the field office at Atlanta, Georgia.

A - HOW EXPENDITURES WERE MADE AND CONTRACTS LET IN CONNECTION WITH PURCHASES
IN FLORIDA.

In addition to the above general statement, the following information, having a more direct bearing on the methods of handling purchases from Florida, is submitted:

1. The Payment of Laborers.- Prior to the preparation of the labor payroll, which serves as a voucher for all disbursements made by the temporary special disbursing agent in Florida, the foreman, district supervisor and division leader certified that the various laborers had performed services on the day for which payment was requested. It is, of course, impossible for the disbursing agent to have personal knowledge of services rendered by all employees or laborers, but insofar as practicable the disbursing officer maintained for his protection a check on the district superintendents.

2. Field Supervision of Travel or Reimbursement Accounts.- All travel and reimbursement accounts are paid by check drawn by the Department disbursing officer in Washington after they have been given the administrative audit at the Washington office of the Plant Quarantine and Control Administration and pre-audited by the General Accounting Office. Prior to forwarding travel and reimbursement accounts to Washington, these accounts are all administratively audited in the field. Before receiving these administrative field audits, the accounts are submitted with the approval of the employee's immediate superior and the division leader. Where the use of personally-owned automobiles was authorized, a close supervision was maintained of the man's travel. Responsible officers have determined distances between various points and checked these distances with the mileage submitted by the employee.

3. Purchase of Supplies and Material.- Wherever possible, materials or supplies needed were secured from the general supply schedule prepared and issued at the first of each fiscal year by the General Supply Committee of the Treasury Department. The purchase of articles which were not on the general supply schedule and involving more than \$50.00, were made on bids issued by the field office in Orlando. Practically all awards were made to the lowest bidder. Whenever the amount of the purchase was large, formal permission from the Chief of the Division of Purchase, Sales and Traffic at Washington was secured prior to making the award. Subsequent to each purchase, the competitive bids were transmitted to the Washington office of the Administration, reviewed, and submitted to the Chief of the Division of Purchase, Sales and Traffic of the Department for examination and making of the award. A digest of all of these bids, together with the original copy of the formal award, is filed with the General Accounting Office, attached to each voucher. All of these papers were given full consideration in auditing the voucher, both by representatives of the Department and the auditors of the General Accounting Office.

Very favorable competition was received in practically every instance. Every effort was made to secure bids from as many firms and interested parties as possible. Invitations for bids were posted on a bulletin, maintained at the field office which could be freely consulted at all times by representatives of various interested concerns.

In event the lowest bid as to price was not accepted, full and satisfactory reasons why the articles offered at the lowest bid did not meet specifications were attached to each award.

In certain instances, when it was impossible, because of the time element, to secure competition, articles were purchased on exigency statements. In all such cases a statement satisfactory to the General Accounting Office was submitted with each voucher before payment.

B - HOW EXPENDITURES WERE MADE AND CONTRACTS LET FOR WORK IN SOUTHERN STATES
(OTHER THAN FLORIDA)

In connection with the work in the Southern States it was unnecessary to employ large numbers of laborers and all payments for labor, as well as all other payments, were made by the disbursing clerk of the Department of Agriculture in Washington.

Early in June George M. Fagan was transferred from the Disbursing Office of the Department in Washington to Atlanta, Georgia, to assist the field leader in making purchases, auditing, and approving payrolls, travel accounts, etc. (For a statement of the qualifications of Mr. Fagan, see section VIII of this memorandum).

The method of supervising travel, and the purchases of supplies and materials outlined above was in general followed by the Atlanta office.

C - SUPERVISION OF EXPENDITURES BY WASHINGTON OFFICE:

As indicated in the general remarks above, all expenditures in Washington were, in general, supervised by the Washington office. All vouchers, either for personal services or supplies and materials, were administratively audited in the Washington office of the Plant Quarantine and Control Administration prior to forwarding to the General Accounting Office. Administrative audit was given to each voucher to see that it complied with the statutes, fiscal regulations of the Department, rulings of the General Accounting Office, and regulations of the Administration. The audited vouchers were submitted to the Business Manager, Mr. B. Connor, who carefully scrutinized them and approved same for payment. In Mr. Connor's absence, the vouchers were certified, after the same careful scrutiny, by another administrative officer of comparable rank and responsibility.

As required by fiscal and accounting regulations, accounts are maintained in the Washington office of appropriations, allotments, liabilities, and expenditures. The various classes of expenditures are coded under the various classifications required by the General Accounting Office. All payments of vouchers are reconciled with the records of the Disbursing Office of the Department. To assist each fiscal officer in the field, carbon copies of all bookkeeping sheets are sent to him at the end of each month. This enables him to compare his accounts with those maintained in Washington. In connection with the work on the Mediterranean fruit fly, it has, in addition, been necessary from time to time to get special reports on expenditures and outstanding liabilities. At the present time, an additional detailed system has been perfected whereby the daily rate of expenditures is carefully estimated. Each fiscal officer in the field is required to submit a weekly report giving the expenditures he makes for various lines of work.

To carry on clean-up, spraying, investigations, maintain road stations and other work connected with the eradication, it has been necessary to secure a considerable amount of equipment. Whenever suitable equipment could be spared - as in the case of equipment purchased in connection with the clean-up campaign on the European corn borer - from other units of the Administration, this equipment was, if economically feasible, transferred to Florida.

The following tables and lists include equipment purchased or transferred:

(Details re these purchases are given on succeeding pages.)

* No passenger carrying automobiles were purchased for use of those engaged in quarantine enforcement or eradication work in Florida.

LIST OF EQUIPMENT TRANSFERRED FROM EUROPEAN CORN BORER PROJECT,
TOLEDO, OHIO, TO MEDITERRANEAN FRUIT FLY WORK IN FLORIDA.

Number	Kind	Description	Date Transferred	T O T A L	
				Original Cost	Present Value
12	Tractors	McCormick Deering	7/27/29	7,704.00	3,852.00
6	Tractors	McCormick Deering	5/11/29	3,852.00	1,926.00
6	Tractors	John Deere	5/11/29	3,840.00	1,920.00
12	Tractors	John Deere	7/27/29	7,680.00	3,840.00
1	Tractors	Fordson	5/11/29	482.56	241.28
37	Total tractors			23,558.56	11,779.28
3	Trailers	Fruehauf 1000-gal.T.	5/11/29	2,032.44	1,016.22
13	Trailers	Fruehauf 1000-gal.T.	5/28/29	8,807.24	4,403.62
3	Trailers	Fruehauf 2-wheel	5/11/29	909.33	454.66
19	Total trailers			11,749.01	5,874.50
6	Trucks	Ford 1/2-ton	5/11/29	2,480.64	1,240.32
6	Trucks	Ford 1/2-ton canopy T.	5/11/29	2,749.62	1,324.81
6	Trucks	Ford 1/2-ton	5/28/29	2,480.64	1,240.32
6	Trucks	Chevrolet 1-ton	5/11/29	4,832.70	2,416.35
20	Trucks	Chevrolet 1-ton	5/28/29	16,109.00	8,054.50
6	Trucks	Defiance 600-gal. Tank	5/11/29	12,822.00	6,411.00
		3-1/2-ton			
2	Trucks	Chevrolet 6-poster	6/13/29	1,610.90	805.45
30	Trucks	Defiance 600-gal. Tank	7/27/29	64,110.00	32,055.00
		3-1/2-ton			
10	Trucks	Defiance 3-1/2-ton	7/27/29	21,307.50	10,653.75
1	Truck	Defiance 1000-gal.T.	5/28/29	2,337.50	1,168.75
6	Trucks	Federal with (Truck Pump)	5/11/29	18,984.00	9,492.00
		F-G Pump		26,088.00	13,044.00
20	Trucks	Federal with (Truck Pump)	5/28/29	60,000.00	30,000.00
		F-G Pump		86,965.00	43,482.50
1	Truck	Federal with (Truck Pump)	5/28/29	3,164.00	1,582.00
		F-G Pump		4,348.00	2,174.00
4	Trucks	International 1-1/2-ton	5/11/29	3,804.24	1,902.12
10	Trucks	International 3-1/2 ton	5/11/29	21,570.00	10,785.00
134	Total trucks			355,763.74	177,831.87
1	Burner Carriage With equipment		5/11/29	110.00	55.00
	Hose	25,000 ft. 3/4"	5/28/29	13,965.00	6,982.50
	Hose	14,000 ft. 1/2"	5/28/29	6,448.40	3,224.20
4	Pulverizers	Stubble, McCormick	5/11/29	509.00	254.50
		Deering			
26	Pulverizers	Stubble, McCormick	5/28/29	3,308.50	1,654.25
		Deering			
221	Grand Total			415,412.21	207,656/10

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The equipment purchased was obtained either on requisitions issued by the Washington office or by the responsible fiscal agent in the field. The following summary gives the amount of money expended for equipment and indicates the amount spent on requisitions issued in Washington as well as on requisitions issued in the field. Following this summary is an itemization giving the requisition number (which refers to papers giving a history of the purchase) and the total amount of each purchase:

SUMMARY OF THE AMOUNT EXPENDED FOR EQUIPMENT

<u>Equipment purchased</u> <u>for use in Florida:</u>	<u>Secured on</u> <u>requisitions</u> <u>issued in</u> <u>Wash., D. C.</u>	<u>Secured on</u> <u>requisitions</u> <u>issued in the</u> <u>field.</u>	<u>Total</u>
For work connected with investigations -----	*(a) 13,204.59	(aa) 5,989.45	19,194.04
For work other than that connected with investi- gations -----	(b) <u>105,100.56</u>	(bb) <u>158,786.20</u>	<u>263,886.76</u>
	118,305.15	164,775.65	283,080.80
	-----	-----	-----
<u>Equipment purchased for</u> <u>use in Southern States</u> <u>(other than Florida): ----</u>	(c) 16,029.64	(cc) 1,291.86	17,321.70
<u>Equipment purchased for</u> <u>use in Washington or</u> <u>Northern States: -----</u>	(d) 2,320.50	0	2,320.50
	-----	-----	-----
Grand Total -----	\$136,655.49	\$166,067.51	302,723.00

*Letters in parenthesis () refer to sections of itemizations which follow.

(a) EQUIPMENT FOR INVESTIGATIONS IN FLORIDA

PURCHASED FROM WASHINGTON,

D. C. ON REQUISITIONS.

<u>OFFICE EQUIPMENT:</u>	<u>Req. No.</u>	<u>Description</u>	<u>No. of articles</u>	<u>Total Price</u>
	1452	Fans, electric	4	\$ 55.60
	1455	Desks	6	258.25
	1467	Sections, etc.	19	236.87
	1729	Typewriter	1	75.00
	1873	Sections, etc.	15	195.10
	1925	Desk	3	126.60
	1926	Sections, etc.	7	42.55
	1927	Fans, electric	1	13.62
	1954	Desk	3	101.30
	1959	Chairs	3	28.17
	2074	Typewriter	1	45.00
		Total -----		\$1,173.06

LABORATORY & SCIENTIFIC
EQUIPMENT:

1471	Stools, rotary	2	13.90
1562	Ice machine, 4-ton	1	2,690.00
1580	Still, water	1	27.00
1617	Pump, air	1	89.10
1618	Centrifuge, electric	1	43.20
1638	Cabinet, Herbarium	1	75.00
1660	Microscope, Spencer	1	17.04
1861	Cabinets, Herbarium	3	225.00
1744	Hygro-Thermograph	2	305.00
1833	Cabinet, carrier processing, etc.	3	2,218.00
1836	Autoclave	1	286.11
2095	Testing set	2	180.00
2105	" "	4	360.00
2123	Potentiometer, etc.	3	415.75
2166	Lamp, Photographic	1	104.00
2169	Extinguishers, fire	2	13.96
2257	Attachment for Stoelting Kymograph	1	75.00
2317	Testing sets	4	360.00
1971	Apparatus, Ion Concentration	1	105.00
	Total -----		\$ 7,603.06

FOR FIELD INVESTIGATIONS:

2080	Automobile, Buick	1	1,604.75
2133	" Ford	6	2,817.72
	Total -----		\$ 4,422.47

(b) EQUIPMENT FOR USE IN FLORIDA OTHER THAN

INVESTIGATIONS, PURCHASED FROM WASHINGTON, D. C.

ON REQUISITION

<u>Req. No.</u>	<u>Description</u>	<u>No. of Articles</u>	<u>Total Price</u>
OFFICE EQUIPMENT			
1032	Typewriter, Underwood	1	\$ 75.00
1083	" Royal	1	75.00
1104	" Underwood	2	150.00
1106	" L. C. Smith	1	77.50
1117	" L. C. Smith	2	205.50
1131	" Underwood	1	75.00
1152	" L. C. Smith	2	152.50
1153	" Underwood	1	75.00
1203	" Underwood	4	212.00
1204	" L. C. Smith	4	310.00
1205	" Royal	1	70.00
1220	" Underwood	1	75.00
1221	" L. C. Smith	1	77.50
1270	" Underwood	1	77.50
1273	" L. C. Smith	7	630.00
1303	" Underwood	6	450.00
1304	" L. C. Smith	6	465.00
1396	" L. C. Smith	6	465.00
1397	" Underwood	4	300.00
1730	" L. C. Smith	1	75.00
1745	" Underwood	2	150.00
1746	" Royal	3	232.50
1762	" Royal	2	150.00
1763	" L. C. Smith	6	465.00
1764	" Underwood	4	300.00
1778	" Remington	1	45.00
1830	" L. C. Smith	1	75.00
2098	" L. C. Smith	1	55.00
1102	Machine, Multiplex, Dalton	1	419.95
1129	Machine, Mimeograph	1	256.50
1159	Machine, Addressing	1	123.20
1502	Machine, duplicating	1	45.00
1775	Convertible Protar Vlla	1	144.53
1776	Camera, Agfa Ansco Universal	1	44.10
1857	Microscope, Binocular	1	164.00
1195	Projection machine	1	245.00
1115	Fans, oscillating	8	106.15

<u>Req. No.</u>	<u>Description</u>	<u>No. of Articles</u>	<u>Total Price</u>
OFFICE EQUIPMENT			
1164	Fans, electric	10	134.08
1245	Trimmer, print	1	16.25
1620	Fans, electric	8	99.57
1101	Card cabinets and panels		51.75
1124	Card Section, 4 x 6		19.35
1166	Stands, typewriter	1	11.10
1178	Files, letter		522.80
1196	Sections, letter; desk		269.51
1198	Chairs, rotary	8	117.44
1200	Desks, 60 inch	3	133.50
1201	Desks, 60 inch	2	128.00
1206	Section, card index	1	17.30
1216	Desk, roll top		81.50
1217	Desk, 60 inch	2	83.10
1222	Section, card index		16.70
1735	Chairs	24	229.80
1736	Sections, letter size	37	493.58
1738	Desks, typewriter, etc.	20	842.70
1739	Chairs		30.87
2006	Chairs, No. 4-C	2	15.00
2390	Sections, letter size	6	126.60
2350	Sections, 5 x 8 card	15	219.30
1915	Cabinets, stationery	22	30.20
1257	Cabinet, 4 drawer		11.05
1253	Sections, horizontal	1	14.76
1254	Base, 16"	1	6.30
1260	Calculating machine	1	467.50
1266	Stands, typewriter	5	22.75
1272	Section, card, 5 x 8	3	50.10
1276	Desks, typewriter & flat top	5	250.60
1281	Stands, typewriter	2	22.20
1308	Sections, card index, 5 x 8	4	69.20
1309	Sections, letter size	2	52.50
1310	Tables, wood, 60 x 34	2	79.50
1311	Chairs, typewriter, etc.		362.68
1312	Sections and chairs		284.80
1314	Desks, typewriter	2	104.70
1315	Desks, flat top	2	83.10
1325	Chairs, 1-C	5	73.40
1327	Chairs	16	135.62
1328	Costumers, Q. O.	10	70.00

<u>Reg. No.</u>	<u>Description</u>	<u>No. of articles</u>	<u>Total Price</u>
OFFICE EQUIPMENT			
1367	Desks and tables		194.25
1368	Chairs and stands		100.62
1370	Sections, 4 x 6 cards		22.10
1403	Chairs, folding, metal	12	24.00
1407	Desks, 60 x 34	5	207.75
1408	Chairs, rotary and desks		240.40
1596	Desks, flat top	6	249.30
1600	Sections, file, etc.		154.18
1338	Fans, electric	5	62.23
1339	" "	1	12.70
1447	" "	2	24.89
1484	" "	6	74.68
1293	Machine, multigraph	1	1,155.00
1394	" multiplex, Dalton	1	418.95
1395	" mimeograph	1	256.50
1400	" Burroughs Adding	1	88.20
1480	" sealing	1	112.50
1495	" mimeograph	1	189.00
1578	Printer, Pa-Ko No. 2		22.75
1495	Stitcher, wire	1	260.00
1132	Truck, Fed. Model A-6	1	1,896.50
1144	" International, 1ton	1	1,436.00
1145	" "	1	807.35
1146	" "	1	537.55
1238	" International, dump	25	25,841.50
1239	" Chrysler, dump	25	37,605.00
1409	" Ford, sta. wagons	15	10,386.60
1148	Sprayer, power	1	565.00
1214	" Knapsack	6	67.50
1215	" "	6	67.50
1637	Grinders, hammer	6	630.00
1636	Boilers, steam	6	7,008.00
1844	Lathe, silent	1	1,417.87
Total -----			\$ 105,100.56

(c) EQUIPMENT FOR USE IN SOUTHERN STATES

PURCHASED FROM WASHINGTON, D. C. ON REQUISITION

<u>Req. No.</u>	<u>Description</u>	<u>No. of Articles</u>	<u>Total Price</u>
<u>OFFICE EQUIPMENT</u>			
Req. 1326	Machines, Adding, Victor	1	\$ 87.13
Req. 1270	Typewriter, Underwood	1	77.50
Req. 1271	Typewriter, L. C. Smith	1	77.50
Req. 1619	Typewriter, Underwood	2	155.00
Req. 1725	Trays, desk	12	12.00
Req. 1895	Typewriters, Portable	1	45.00
	Total - - - - -		<u>454.13</u>
<u>FIELD EQUIPMENT</u>			
Req. 1509	Coach, Ford	5	2526.25
Req. 1842	Truck, Ford Roadster	3	1614.30
Req. 1513	Coach, Ford	2	1158.54
Req. 1510	Coach, Ford	5	2832.50
Req. 1300	Touring cars, Ford	10	5165.00
Req. 1840	Truck, Chevrolet	4	2879.12
	Total - - - - -		<u>15575.71</u>
	GRAND TOTAL		<u>16029.84</u>

(d) EQUIPMENT FOR USE IN WASHINGTON AND NORTHERN STATES

PURCHASED FROM WASHINGTON, D. C.

ON REQUISITION

<u>Req. No.</u>	<u>Description</u>	<u>No. of Articles</u>	<u>Total Price</u>
<u>OFFICE EQUIPMENT</u>			
Req. 1854	Typewriter, Corona	1	\$ 45.00
Req. 1716	" Remington	1	75.00
Req. 1322	" Underwood	3	215.00
Req. 2098	" L. C. Smith	1	55.00
Req. 1322	" Underwood	2	140.00
Req. 1499	Adding Machine Dalton	1	737.90
Req. 2026	Mimeograph, A. B. Dick	1	45.00
Req. 1920	Sections, letter size	1	36.80
Req. 1423	" card index, etc.	1	109.64
Req. 1928	" Steel, letter	6	126.60
Req. 1698	Chairs, desk		102.50
Req. 2006	" No. 4-C	1	15.00
Req. 2178	" posture	2	22.00
Req. 1440	Table, g.o.		27.50
Req. 1411	" 48 x 32	1	18.75
Req. 1428	Stand, typewriter		9.85
Req. 1962	Desk, drop center		47.50
Req. 1305	Rug, Thittall	1	54.70
Req. 1542	Fan, ceiling	1	28.91
Req. 1597	Files, transfer	6	3.10
Req. 1860	Tank, developing, Relo	1	13.23
Req. 1856	Microscope, Spencer		137.60
Req. 1894	Safe, #14, Meilink		243.77
Req. 1404	Cabinet, stationery		10.15
Total -----			\$2,320.50

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1. The first part of the document is a list of names and dates, which appears to be a record of some kind. The names are written in a cursive script, and the dates are in a more formal, printed style. The list is organized into two columns, with names on the left and dates on the right. The names are: John A. Smith, John B. Smith, John C. Smith, John D. Smith, John E. Smith, John F. Smith, John G. Smith, John H. Smith, John I. Smith, John J. Smith, John K. Smith, John L. Smith, John M. Smith, John N. Smith, John O. Smith, John P. Smith, John Q. Smith, John R. Smith, John S. Smith, John T. Smith, John U. Smith, John V. Smith, John W. Smith, John X. Smith, John Y. Smith, John Z. Smith. The dates are: 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457,

(ee) EQUIPMENT PURCHASED FOR INVESTIGATIONS
IN FLORIDA ON FORMAL AWARDS ISSUED IN FIELD

<u>Award No.</u>	<u>Description</u>	<u>No. of Articles</u>	<u>Total Price</u>
5460	Fly traps	20 gross	\$ 640.00
6064	" "	1000	147.50
6096	" "	1000	147.50
7174	" "	4000	590.00
7035	" "	1000	147.50
7175	" "	30 gross	960.00
5121	" "	10 gross	360.00
4562	" "	500	120.00
4832	" "	1000	150.00
4839	" "	10 gross	332.50
4609	" "	1000	150.00
5190	" "	1000	142.50
5461	" "	3000	427.50
4900	" "	1000	145.00
5133	" "	10 gross	325.75
7066	" "	10 gross	297.00
5923	Ventilating Ducts	1	230.00
6395	Sinks, furnishing & installing	1 1	214.50
6902	Re-circulating ducts	1	90.00
6232	Grinder and motor	1	194.00
6062	Fan	1	178.20
	Total - - - - -		\$ 5,989.45

(bb) EQUIPMENT FOR WORK OTHER THAN INVESTIGATIONS IN

FLORIDA ON FORMAL AWARDS ISSUED

IN FIELD

<u>Award No.</u>	<u>Description</u>	<u>No. Articles</u>	<u>Total Price</u>
3696 A1S	Trucks, accessories,	7	\$ 4,013.59
3760 A1S	"	5	3,544.90
4559 USDA	"	1	1,285.00
5256 USDA	"	1	635.75
5923	"	1	1,559.40
3991	"	1	807.35
4205	" accessories		2,121.60
3990	"	1	1,436.00
4926	Sprayers, Knapsack	103	1,458.95
4443	" "	24	336.00
4275	Tractors	5	4,944.15
5495	Sprayers, power	9	5,355.00
5134	" "	4	1,990.00
4262	Tractor, sprayers	16	15,612.80
4204	" "	2	1,868.46
4460	" "	16	15,612.80
4302	" "	"	7,744.00
5379	Tractor wheels	7	1,010.00
3992	Sprayer, power	1	565.00
5348	Bordeaux Nozzles	100	114.66
5496	Engine with oil system	1	525.00
4232	Tractor sprayers	3	1,395.00
4197	" "	3	1,395.00
4459	" "	16	6,560.00
4773	" "	16	6,600.96
6215	Sprayer pumps, Knapsack	50	1,117.50
6264	" " "	1 gross	1,101.60
4443	" " "	24	336.00
5875	" " "	2 dozen	242.40
5875	Pumps		85.60
5502	Spray guns	100	600.00
4767	Sprayers, Knapsack		2,080.00
6558	Spray guns	52	721.40
5037 USDA	Sprayers	100	260.00
5336	"	288	2,704.32
5467	Nozzles	250	385.00
5523	Sprayers	2	1,000.00
4617	"	100	260.00
4148	"	6	67.50

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<u>Award No.</u>	<u>Description</u>	<u>No. Articles.</u>	<u>Total Price</u>
4143	Sprayers	6	67.50
4455	"	9	135.00
4456	"	6	67.50
4925	"	41	568.26
5052	Files, steel	3	82.21
4895	Aluminum Binders	200	416.00
5192	Machines, rubber stamp	50	115.00
5300	Metal tank	1	67.13
4207	Air compressors	3	467.10
5487	Automatic acetylene generator	1	299.75
5111	Gasoline engines	1	264.60
5696	Flashlights	50	87.00
4390	Fire Extinguishers	12	117.36
4392	Flashlights		540.00
5941	Wrecking crane		231.00
4038	Hose, 500 ft.		93.75
5048	Suction hose	27	452.25
4920	Pump	1	190.92
5186	Outboard motor	1	170.00
4844	Water coolers	6	80.70
5047	Pruning saws		91.73
4319	Orange picking bags	12 dozen	324.00
6496	Metal plates	10,000	122.27
5619	Water kegs	36	102.32
5118	Picking bags	36	88.20
4322	" "	6 dozen	162.00
5877	Water kegs	40	109.76
4230	Signs		69.28
4571	"		426.30
6785	Flashlights and accessories		121.80
5049	Chains, tow		95.06
6272	Iron vats	6	270.00
6727	Boiler and Equipment	1	525.00
5119	Machetes, etc.		401.26
5542	Johnson valve oiler, etc.		53.90
5705	Machetes, etc.		2,038.48
6013	Reborer and grinder		474.83
6643	Gasoline heaters		218.05
6757	Nesco Perfect Oil Heater		448.00
5735	Fan		81.34
4894	Metal cabinets, etc.		163.75

<u>Award No.</u>	<u>Description</u>	<u>No. Articles</u>	<u>Total Price</u>
4916	Toilets	40	\$ 117.60
5730	Pumps, water	6	840.00
4615	Cutters, and equipment		276.03
5178	Cans	2000	269.80
4756	Lantern		78.00
5969	Smith Sprayer repair parts		93.05
5177	Cans	500	337.50
5038	"		116.20
4391	Batteries		59.60
5187	Cans		1,149.12
4774	Tractors	16	15,772.00
5263	Metal pipe culverts		251.20
4937	Wheels, hubs and accessories		6,133.00
4202	File, letter		81.00
5620	Switch brooms, and fire extinguisher		327.00
5440	Pumps	6	768.30
5413	Repair parts for Fed. trucks		89.45
4968	Repair parts for Fed. trucks		51.60
	Total -----		\$ 137,218.50
	Miscellaneous small purchases of auto and spray parts, and other small equipment purchased in field -----		\$ 21,567.70
	Grand Total -----		\$ 158,786.20

(cc) EQUIPMENT FOR USE IN SOUTHERN STATES PURCHASED

ON FORMAL AWARDS ISSUED IN FIELD.

<u>Award No.</u>	<u>Description</u>	<u>No. Articles</u>	<u>Total Price</u>
6518	Stoves	45	134.10
6520	Lanterns	42	390.24
6517	Folding Cots	60	150.00
5341	Carbic lights		403.30
5295	Furniture		214.22
		Total	\$ 1,291.86

VIII--SELECTION AND APPOINTMENT OF PERSONNEL

General Statement

When the Mediterranean fruit fly was discovered there was no available agency to handle the emergency and it was necessary to build up an entirely new organization. Owing to the imperative need for immediate action, it was necessary to hire a large number of employees on a labor basis until the necessary information could be secured for their formal appointment as Agents. All of these employees, with the exception of those whose ability was known, were taken on at exceptionally low salaries, as were those who were originally taken on as Agents. Later, as the employees proved their worth, and were assigned to more important work, their salaries were adjusted.

The nucleus of this organization was formed by transferring trained employees from other projects of the Plant Quarantine and Control Administration and other bureaus of the Department (the employees so transferred are listed at the end of this section), and by taking over some 65 employees of the Florida State Plant Board and Experiment Station, most of whom have had long experience in plant quarantine and control work, and many of whom have records of efficiency in connection with the cooperative work performed by the Department and the State of Florida on the eradication of citrus canker. Several of these employees have since returned to their former duties.

A.- WORK IN FLORIDA

Individual Formal Appointments by Secretary

With the exception of the Civil Service employees transferred from other projects or from other bureaus, practically all of the employees under formal appointment were taken on as Agents under Clause 1-a of Schedule A, Subdivision IX, of the Civil Service Rules, thus continuing the policy which has been followed on other important plant quarantine and control projects where the work is conducted in co-operation with the State or States concerned.

We have also followed the policy of allowing the field leader to select the employees deemed qualified to perform the work being conducted under his supervision. This policy has been uniformly followed on all of the plant quarantine and control projects--whether the employees were being appointed from Civil Service Certificates, as Agents under the rule above referred to, or as laborers. Inasmuch as the field leader is held responsible for results, it is considered no more than fair that he should be given this opportunity. Furthermore, he has a more intimate knowledge of the work and conditions, and in many cases he can interview the applicants. In such cases there is an opportunity to consider personality and thus better judge the applicant's fitness.

After the field leader has made his selections, he forwards the recommendations to Washington for review and approval. Naturally, the approval in Washington can be based only on available information as to

education, training, experience, etc., but the qualifications are carefully scrutinized and whenever there is a doubt as to the fitness of any person recommended for appointment, the recommendation is either disapproved or held up pending the receipt of additional information which clearly indicates that the applicant possesses the necessary qualifications.

A great many of the employees under formal appointment are either college graduates, or men who have had some college education. However, training and previous experience is of much more importance than education for certain types of work, and this is especially true in connection with spraying operations and quarantine enforcement work.

This latter work is being conducted in a highly satisfactory manner by officers and enlisted men of the Florida National Guard, the officers being employed under formal appointment as Agents and the enlisted men being carried as laborers and paid as such. Incidentally, it is our firm conviction that no civilian force could have been organized to maintain quarantine lines as promptly, as effectively, or as cheaply.

The men who have been transferred from other projects or bureaus have been selected by the Chief or Acting Chief of the Administration, after consultation with the project leaders or bureau Chiefs concerned.

The employees taken over from the State Plant Board and Experiment Station were selected by the State Plant Commissioner or the head of the Experiment Station and their appointment recommended to the Chief of the Administration.

All other employees under formal appointment, except the recently appointed Federal Fruit Fly Board, were selected on recommendation of the field leader (Dr. Wilmon Newell) or his first assistant (Mr. A. C. Brown). In many cases they were also recommended by college officials in other States. Thousands of applications for employment were received, examined, and graded on a selective basis. The selections were practically always made from these applications, and whenever possible references were checked up.

The Federal Fruit Fly Board was selected by the Secretary of Agriculture, in cooperation with the Chief of the Plant Quarantine and Control Administration and various members and officials of the National Plant Board.

Laborers employed under Letter of Authorization

One of the most pressing needs at the beginning of the eradication campaign was the cleanup of infested groves and the destruction of fruit from such groves--work which could best be done by ordinary day laborers working under the supervision of competent foremen. Steps were immediately taken, therefore, to secure a large force of laborers.

Under ordinary conditions it would, of course, not have been possible for the field leader of a project of this type to interview the thousands of applicants for these jobs, and under the emergency conditions which existed it was not always possible for the District Superintendents to interview all applicants. The actual hiring of the day laborers had, therefore, in many cases to be delegated to local superintendents, with the District Superintendents checking up on them whenever possible.

Federal Employees Deputized to act as State Agents

The State Plant Commissioner was given authority by the State Plant Board to deputize the Federal employees in Florida to act as State Agents, and this has been done except as to temporary day laborers and clerks. In many cases, when large numbers of employees were being taken on, the deputization was accomplished by blanket appointments, but in some instances it was accomplished by individual appointments.

B.- WORK IN SOUTHERN STATES.

The information given above relative to the selection of employees for work in Florida is largely applicable to the selection of employees for work in the other southern States, except that in the latter case the work in each State is under the supervision of a responsible official of the State Plant Quarantine Service who reports to the project leader, Mr. P. A. Hoidale. All of the employees who were appointed by the Secretary for work on this project were recommended to Mr. Hoidale by the responsible State Plant Quarantine official of the State concerned. As these recommendations were concurred in by Mr. Hoidale they were forwarded to Washington for review and approval. For the most part the temporary laborers employed on this project were also recommended by the responsible State Plant Quarantine officials of the States concerned.

C.- WORK IN NORTHERN STATES.

The work in the northern States is mostly confined to transit inspection in an effort to apprehend original or reshipments of host fruits or vegetables which may have moved interstate in violation of the quarantine, and to see that refrigerator cars have been cleaned in accordance with the quarantine requirements. The employees assigned to this work have been selected by the Washington office either because of previous experience in transit inspection or of railroad experience which peculiarly fits them for this line of work. The increased clerical and stenographic work in Washington caused by the fruit fly situation has been taken care of by selections from Civil Service Certificates, reinstatements of former Civil Service employees, or transfers from other bureaus or departments of the Government Service.

The tables which follow give a fairly accurate picture of the personnel which has been engaged on the fruit fly project since the work was started in April.

APPOINTED PERSONNEL--

In these tables the appointed personnel has been divided into the following sections:

- Quarantine and eradication work in Florida
- Work in southern States (outside of Florida)
- Investigational work in Florida
- Washington administration (Washington employees)
- Washington administration (including those engaged in transit inspection, etc. in northern States)

All of the employees covered by the tables of appointed personnel did not necessarily work for the full month concerned. There was a very rapid turnover at times and the figures given represent the maximum number of employees, at the respective rates of pay, on the roll at any time during any one month. The tables do not include for the month of April the employees transferred from other projects or other bureaus.

APPOINTED PERSONNEL

Quarantine and Eradication Work in Florida

Annual

Rate	:April:	May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Jan.	:Feb.:
\$6500	:	:	:	:	:	:	:	:	:	5	5 :
5000	:	:	:	:	:	:	:	:	:	:	1 :
4800	:	:	:	1	1	1	1	1	1	1	1 :
4600	:	1	1	2	2	2	2	2	2	2	2 :
4400	:	1	1	1	1	1	1	1	1	1	1 :
4200	:	:	:	2	2	3	2	2	2	:	:
4000	:	1	1	1	1	1	1	1	1	1	1 :
3800	:	1	2	2	2	2	1	:	:	:	:
3700	:	:	:	:	:	:	:	:	:	1	1 :
3600	:	5	5	9	9	9	8	8	6	4	4 :
3400	:	:	:	:	:	1	:	:	:	:	:
3200	1	8	14	14	8	8	9	9	9	9	9 :
3100	:	:	:	1	1	:	:	:	:	:	:
3000	:	11	15	17	17	16	14	14	14	13	14 :
2900	:	:	1	1	1	1	1	1	1	1	1 :
2800	1	8	4	7	6	4	6	4	4	4	4 :
2700	2	:	3	:	:	1	1	1	1	1	1 :
2600	1	:	10	3	1	2	2	2	:	:	:
2500	:	27	27	25	24	25	20	19	19	18	18 :
2400	:	1	6	11	11	11	11	11	10	9	9 :
2300	:	24	24	19	18	18	18	18	18	17	17 :
2200	:	:	1	:	:	1	1	1	1	1	1 :
2100	:	1	3	4	4	6	7	7	6	6	6 :
2000	1	:	8	2	2	5	5	5	5	5	6 :
1920	:	:	:	1	1	1	1	1	1	1	1 :
1800	:	53	101	130	131	118	124	117	113	110	106 :
1500	:	30	54	56	53	48	37	31	30	28	28 :
1200	:	15	30	33	32	32	30	26	25	24	25 :
1080	:	:	1	1	1	1	1	1	1	1	1 :
960	:	:	1	1	:	:	:	:	:	:	:
900	:	1	2	2	2	2	2	2	2	2	1 :
800	:	:	1	:	:	:	:	:	:	:	:
750	:	:	:	1	1	1	:	:	:	:	:
600	:	1	2	:	:	:	:	:	:	:	:
120	:	1	1	1	1	1	1	1	1	1	1 :
:	:	:	:	:	:	:	:	:	:	:	:
Totals:	6	190	319	348	333	322	307	286	274	266	265 :

Work in Southern States
(Outside of Florida)

Annual

Rate	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
\$4400	:	:	:	:	:	1	1	1	1	1	1
4000	:	:	:	1	1	:	:	:	:	:	:
3600	:	1	1	1	1	1	1	1	:	:	:
3200	:	1	1	1	1	1	1	1	1	1	1
3000	:	:	1	1	1	:	:	:	:	:	:
2900	:	:	:	1	1	1	1	1	1	1	1
2800	:	1	1	3	1	2	1	1	1	1	1
2600	:	1	1	1	1	1	1	1	1	1	1
2500	:	:	2	1	1	1	1	1	1	1	1
2400	:	:	:	:	1	1	1	1	1	1	1
1860	:	1	1	1	1	1	1	1	1	1	1
1800	:	:	1	4	4	2	2	2	2	2	2
1620	:	19	31	29	25	6	5	2	1	2	2
1500	:	2	7	6	6	:	:	:	:	:	:
1440	:	8	22	28	25	10	1	1	1	1	1
1320	:	:	:	:	:	:	:	5	5	5	5
1200	:	36	76	74	54	12	10	15	14	12	12
300	:	:	:	:	:	1	1	1	1	1	1
Totals	:	70	145	152	124	41	28	35	32	31	30
Daily Rate (\$7.20)							1				

Investigational Work in Florida

Annual

[illegible]

APPOINTED PERSONNEL

Washington Administration (Washington Employees)

Annual

Rate	:April:	May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Jan.	:Feb.	15:
\$5600	:	:	1	:	:	:	:	:	:	:	:	:
4800	:	:	1	:	:	:	:	:	:	:	:	:
2300	:	:	1	:	:	:	:	:	:	:	:	:
2100	:	:	1	:	:	:	:	:	:	:	:	:
1800	:	:	1	1	1	1	1	1	1	1	1	1
1680	:	:	2	1	:	:	:	:	:	:	:	:
1620	:	:	2	:	1	1	1	2	3	3	3	3
1500	:	:	:	:	:	:	:	:	:	:	1	:
1440	:	:	4	3	5	6	6	11	12	11	8	:
1080	:	:	:	:	1	1	1	1	:	:	:	:
600	:	:	:	:	1	1	1	1	1	:	1	:
Totals:	:	:	13	5	9	10	10	16	17	15	14	:

Washington Administration (Including those engaged
in transit inspection, etc. in northern States)

Annual

Rate	:April:	May	:June	:July	:Aug.	:Sept.	:Oct.	:Nov.	:Dec.	:Jan.	:Feb.	15:
\$2800	:	:	:	:	:	:	:	1	1	1	1	:
2400	:	:	:	2	1	1	2	2	2	3	4	:
2300	:	:	:	:	:	:	:	:	:	:	1	:
2280	:	1	1	:	:	:	:	:	:	:	:	:
2160	:	1	1	:	:	:	:	:	:	:	:	:
2100	:	:	:	:	:	:	4	2	2	2	3	:
1980	:	:	:	:	:	:	1	1	1	1	2	:
1800	:	:	1	2	:	:	5	4	4	5	7	:
1740	:	:	:	:	:	:	:	:	:	:	1	:
1680	:	:	:	:	:	:	:	:	:	:	1	:
1560	:	:	:	:	:	:	:	:	:	:	4	:
1500	:	1	1	:	:	:	1	1	1	1	:	:
Totals:	:	3	4	4	1	1	13	11	11	13	24	:

Daily

Rates	:	:	:	:	:	:	:	:	:	:	:	:
\$25.	:	:	:	7	:	:	5	:	:	:	:	:
6.96:	:	4	4	:	:	:	:	:	:	:	:	:
5.50:	:	:	:	:	:	:	1	:	:	:	:	:
5.00:	:	:	1	:	:	:	:	:	:	:	:	:
4.17:	:	1	:	:	:	:	:	:	:	:	:	:
2.50:	:	:	1	:	:	:	:	:	:	:	:	:
Totals:	:	5	6	7	:	:	6	:	:	:	:	:

Hourly

Rates	:	:	:	:	:	:	:	:	:	:	:	:
\$.90	:	:	:	:	:	:	1	:	:	:	:	:
.70	:	1	4	1	1	:	:	:	:	:	:	:
.62 $\frac{1}{2}$:	:	:	1	1	1	1	:	:	:	:	:
.65	:	:	1	:	:	:	:	:	:	:	:	:
Totals:	:	1	5	2	2	1	2	:	:	:	:	:

LABOR ROLL.-

There was not sufficient time to prepare as detailed tables with respect to the large number of employees carried on the labor roll as were prepared to show the personnel under formal appointment. However, the following table gives the average number of laborers employed during each month. The rates of pay have varied from 75 cents to \$3.00 a day, and from 15 cents to \$1.00 per hour. The great bulk of the laborers--perhaps 90 to 95%--have been paid at the rate of \$2.00 per day or 25 cents per hour for strictly laboring work, and \$3.20 per day or 40 cents per hour for foremen.

Month	Average Number of Employees
April	416
May	3,650
June	4,520
July	5,262
August	5,647
September	5,310
October	3,452
November	1,807
December	1,647
January	1,656

The above table does not include laborers employed for work in the southern States outside of Florida. However, the number so engaged was comparatively small and the monthly average would probably vary from 50 to 175 employees.

Photostatic copies of a representative labor pay roll are attached. The originals of all such pay rolls are on file in the General Accounting Office in Washington.

PAY ROLL FOR PERSONAL SERVICES

Page No. 1

(EMPLOYEES ON ANNUAL SALARY BASIS)

U. S. Dept. of Agriculture
(Department or establishment)

Plant Quar. & Control Adm.
(Bureau, division, or office)

Orlando, Fla.
(Location)

C. M. Fox, T.S.D.A.
(Name and designation of disbursing officer)

Period from May 30, 1929, 192, to June 5, 1929, 192

We, the subscribers, severally acknowledge to have received of the above-named disbursing officer, IN CASH, the sums set opposite our respective names in full payment for our services for the period of this pay roll, except as noted in the column of "Remarks," and we hereby certify that said sums are correct.

No.	NAME, GRADE, DESIGNATION, AND TOTAL SALARY RATE	Rate of pay	DEDUCTIONS		Net Amount Paid	Date paid CHECKS FOR CASH AND NOTATIONS OF CHECK PAYMENTS (number and date) To be signed by payee only after the roll has otherwise been completed, and no alterations or erasures are to be made thereon. Payments on subvouchers to be noted by number. This roll is NOT to be signed in duplicate, nor for payments made by check. Checks drawn on Treasurer U. S., unless otherwise noted in "Remarks" column. Address	REMARKS All deductions to be clearly and fully explained, together with such other facts as may affect pay status. Appointments, transfers, promotions, demotions, separations, and other changes affecting pay status to be noted in this column, including periods of service varying from the full period of the roll. Signature by mark must be attested by one disinterested witness with address.
			Basic	Other			
	L. A. 904 dated 5/2/29 All Laborers						
1	Clarence Green Foreman	.35 hr.	13 hrs.		4.55	Lakeland, Fla.	67115
2	Ray Allen	.25"	13"		3.25	" "	67116
3	C. D. Herring	.25"	13"		3.25	" "	67117
4	J. D. Morris	.25"	13"		3.25	" "	67118
5	F. P. Selph	.25"	13"		3.25	" "	67119
6	R. J. Dennis	.25"	13"		3.25	" "	67120
7	S. W. Stearns	.25"	13"		3.25	" "	67121
8	J. W. Morrison	.25"	13"		3.25	" "	67122
9	Ray Phillips	.25"	13"		3.25	" "	67123
10	J. D. Lovell Foreman	.35"	4"		1.40	" "	67124
11	C. L. Freeman	.25"	4"		1.00	" "	67125
12	S. G. Truitt	.25"	4"		1.00	" "	67126
13	J. M. Purvis	.25"	4"		1.00	" "	67127
14	J. P. Edenfield	.25"	4"		1.00	" "	67128
15	J. F. Tolson	.15"	4"		.60	" "	67129
16	G. B. Clark	.25"	4"		1.00	" "	67130
17	J. B. Castle	.25"	4"		1.00	" "	67131
18	U. J. Chaney	.15"	4"		.60	" "	67132
19	J. A. Kline Foreman	.35"	13"		4.55	" "	67133
20	Perry Turner	.25"	13"		3.25	" "	67134
21	Perry Ellis	.25"	13"		3.25	" "	67135
22	Douglas Pittman	.25"	13"		3.25	" "	67136
23	W. J. Lee	.25"	13"		3.25	" "	67137
24	Sam Cash	.25"	13"		3.25	" "	67138
25	T. Collins	.25"	9"		2.25	" "	67139
26	M. A. York	.25"	9"		2.25	" "	67140
27	H. S. Burton	.25"	9"		2.25	" "	67141
28	A. L. Bulger Foreman	.35"	13"		4.55	" "	67142
29	Joe Christmas	.25"	13"		3.25	" "	67143
30	Jack Shaw	.25"	13"		3.25	" "	67144

PAY ROLL FOR PERSONAL SERVICES

(EMPLOYEES ON ANNUAL SALARY BASIS)

U. S. Dept. of Agriculture
(Department or establishment)

Plant Quar. & Control Adm.
(Bureau, division, or office)

Orlando, Fla.
(Location)

C. M. Fox, T.S.D.A.
(Name and designation of disbursing officer)

Period from May 30, 1929, 192, to June 5, 1929, 192

We, the subscribers, severally acknowledge to have received of the above-named disbursing officer, IN CASH, the sums set opposite our respective names in full payment for our services for the period of this pay roll, except as noted in the column of "Remarks," and we hereby certify that said sums are correct.

No.	NAME, GRADE, DESIGNATION, AND TOTAL SALARY RATE	Gross Amount Rate of pay	DEDUCTIONS		Net Amount Paid	Date paid SIGNATURE FOR CASH AND NUMBER OF CHECK PAYMENTS (number and date) To be signed by payee only after the roll has otherwise been completed, and no alterations or erasures are to be made thereafter. Payments on subvouchers to be noted by number. This roll is NOT to be signed in duplicate, nor for payments made by check. Checks drawn on Treasurer U. S., unless otherwise noted in "Remarks" column. Address. Check No.	REMARKS
			Retain Total time	Other			
	L. A. 904 dated 5/2/29 All laborers						
1	(Foreman) J. P. McCormio (A. L. Bulger)	\$.25hr.	13hrs.		\$ 17.75 3.25	Lakeland, Fla. 67145	
2	James Moore	.25"	4"		1.00	" " 67146	
3	James Barrett	.25"	13"		3.25	" " 67147	
4	Will Grady	.25"	13"		3.25	" " 67148	
5	James Grady	.25"	13"		3.25	" " 67149	
6	George Jones	.25"	13"		3.25	" " 67150	
7	Carl Schrieber	.25"	13"		3.25	" " 67151	
8	(Foreman) Paul P. Collins (C. L. Wood)	.45"	13"		5.85	" " 67152	
9	C. L. Wood Foreman	.35"	13"		4.55	" " 67153	
10	Harold Patten	.25"	13"		3.25	" " 67154	
11	Lee Ellis	.25"	13"		3.25	" " 67155	
12	Elmer Smith	.25"	13"		3.25	" " 67156	
13	T. B. Waters	.25"	13"		3.25	" " 67157	
14	Bob Alderman	.25"	13"		3.25	" " 67158	
15	Clyde Faircloth	.25"	13"		3.25	" " 67159	
16	V. O. Turner	.25"	13"		3.25	" " 67160	
17	Wendell Phillips	.25"	13"		3.25	" " 67161	
18	C. A. Glover Foreman	.35"	4"		1.40	" " 67162	
19	S. A. Clonts	.25"	4"		1.00	" " 67163	
20	B. J. Barrett	.25"	4"		1.00	" " 67164	
21	E. H. Barrett	.25"	4"		1.00	" " 67165	
22	T. B. Yoph	.25"	4"		1.00	" " 67166	
23	W. B. Hall	.25"	4"		1.00	" " 67167	
24	C. H. Hughes	.25"	4"		1.00	" " 67168	
25	J. J. Anderson	.25"	4"		1.00	" " 67169	
26	Marvin Chaney	.25"	4"		1.00	" " 67170	
27	2944 (Foreman) Chas. Combes (L. D. Fussell)	.25"	27"		6.75	Auburndale, " 67171	
28	2945 C. W. Watkins	.25"	27"		6.75	" " 67172	
29	2946 Chas. Norman	.25"	27"		6.75	" " 67173	
30	2947 Herman Fussell	.15"	44"		6.60	" " 67174	

PAY ROLL FOR PERSONAL SERVICES (EMPLOYEES ON ANNUAL SALARY BASIS)

Page No. 3

U. S. Dept. of Agriculture
(Department or establishment)

Plant Quar. & Control Adm.
(Bureau, division, or office)

Orlando, Fla.
(Location)

C. M. Fox, T.S.D.A.
(Name and designation of disbursing officer)

Period from May 30, 1929, 192, to June 5, 1929, 192

We, the subscribers, severally acknowledge to have received of the above-named disbursing officer, IN CASH, the sums set opposite our respective names in full payment for our services for the period of this pay roll, except as noted in the column of "Remarks," and we hereby certify that said sums are correct.

No.	NAME, GRADE, DESIGNATION, AND TOTAL SALARY RATE L. A. 904 dated 5/2/29 All Laborers	Gross Amount Rate of time	DEDUCTIONS		NET AMOUNT PAID	Date paid SIGNATURES FOR CASH AND NOTATIONS OF CHECK PAYMENTS (number and date) To be signed by payee only after the roll has other- wise been completed, and no alterations or erasures are to be made thereafter. Payments on subvouchers to be noted by number. This roll is NOT to be signed in duplicate, nor for payments made by check. Checks drawn on Treasurer U. S., unless otherwise stated in "Remarks" column. Address	Check No.	REMARKS All deductions to be clearly and fully explained, together with such other facts as may affect pay status. Appointments, transfers, promotions, dispositions, separations, and other changes affecting pay status to be noted in this column, including periods of service vary- ing from the full period of the roll. Signature by check must be attested by one disinterested witness with address.
			Retire- ment	Other				
1	2948 (Foreman) Dunbar Cooper (L. D. Fussell)	.35hr.	23hrs.		\$110.90 8.05	Amberdale, Fla.	67175	
2	James Roseman	.15"	9"		1.35	"	67176	
3	J. M. Weekley	.25"	5"		1.25	"	67177	
4	G. F. Chancey	.25"	26"		6.50	"	67178	
5	Edward Scott	.25"	26"		6.50	"	67179	
6	J. P. Kadar	.25"	26"		6.50	"	67180	
7	Ralph Baxley	.25"	27"		6.75	"	67181	
8	Frank Bowlin	.25"	5"		1.25	"	67182	
9	L. L. Green	.25"	18"		4.50	"	67183	
10	A. M. Hebb	.25"	18"		4.50	"	67184	
11	S. A. Bolin	.25"	18"		4.50	"	67185	
12	2901 L. D. Fussell Foreman	.35"	53"		18.55	"	67186	
13	2902 J. M. Collins	.25"	49"		12.25	"	67187	
14	2904 Mack Norman	.25"	49"		12.25	"	67188	
15	2905 A. F. Cochran	.25"	41"		10.25	"	67189	
16	L. D. Fussell, Jr.	.25"	5"		1.25	"	67190	
17	2006 Herbert Hebb	.25"	49"		12.25	"	67191	
18	2907 R. B. Green	.25"	41"		10.25	"	67192	
19	2908 Stewart Green	.25"	44"		11.00	"	67193	
20	2909 Stephen Windisman	.25"	35"		8.75	"	67194	
21	2910 Joe Beha	.25"	35"		8.75	"	67195	
22	2911 Hamster Harrell	.25"	44"		11.00	"	67196	
23	2912 Floyd Webb	.15"	35"		5.25	"	67197	
24	W. M. Reynolds Foreman	.35"	41"		14.35	"	67198	
25	Lester Reynolds	.25"	41"		10.25	"	67199	
26	C. Norman	.25"	14"		3.50	"	67200	
27	M. Dixon	.25"	23"		5.75	"	67201	
28	Hury Reynolds	.25"	32"		8.00	"	67202	
29	B. T. Dobson	.25"	37"		9.25	"	67203	
30					395.45			

May 30, 1929

REPORT OF TOTAL TIME FOR PERIOD

A. No. 519

Ending

June 5, 1928

NAMES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total Time
1 Clarence Green				4	9																										15 hrs.
2 Ray Niles				4	9																										13 "
3 G. D. Herring				4	9																										13 "
4 J. D. Morris				4	9																										13 "
5 F. P. Selph				4	9																										13 "
6 R. J. Dennis				4	9																										13 "
7 S. W. Stearne				4	9																										13 "
8 J. W. Morrison				4	9																										13 "
9 Ray Phillips				4	9																										13 "
10 J. D. Lovell				4																											4 "
11 C. L. Freeman				4																											4 "
12 S. G. Trullitt				4																											4 "
13 J. W. Purvis				4																											4 "
14 J. P. Edenfield				4																											4 "
15 J. F. Tolson				4																											4 "
16 G. B. Clark				4																											4 "
17 J. B. Castle				4																											4 "
18 U. J. Cheney				4																											13 "
19 J. A. Kline				4	9																										13 "
20 Perry Turner				4	9																										13 "
21 Perry Ellis				4	9																										13 "
22 Douglas Pittman				4	9																										13 "
23 W. J. Lee				4	9																										13 "
24 Sam Cash				4	9																										9 "
25 T. Collins				9																											9 "
26 M. A. York				9																											9 "
27 H. S. Burton				9																											13 "
28 A. L. Bulgar				4	9																										13 "
29 Joe Christman				4	9																										13 "
30 Jack Shaw				4	9																										13 "

Beginning

REPORT OF TOTAL TIME FOR PERIOD

A. No. 519

Beginn

May 30, 1929

Ending

June 5, 1929

NAMES	1	2	3	4	5	6	7	8	9	10	11	Total Time
15. P. McGormlo				4	9							15 hrs.
2 James Nicore				4								4 "
3 James Barrett				4	9							13 "
4 Wall Gredy				4	9							13 "
5 James Gredy				4	9							13 "
6 George Jones				4	9							13 "
7 Carl Schrieber				4	9							13 "
8 Paul P. Collins				4	9							13 "
9 C. L. Wood				4	9							13 "
10 Harold Patten				4	9							13 "
11 Lee Ellis				4	9							13 "
12 Elmer Smith				4	9							13 "
13 T. R. Waters				4	9							13 "
14 Bob Alderman				4	9							13 "
15 Clyde Patrolcith				4	9							13 "
16 V. O. Turner				4	9							13 "
17 Wendell Phillips				4	9							13 "
18 C. A. Glover				4								4 "
19 S. A. Clonts				4								4 "
20 B. J. Barrett				4								4 "
21 E. H. Barrett				4								4 "
22 T. B. Yordh				4								4 "
23 W. B. Hall				4								4 "
24 C. H. Hughs				4								4 "
25 J. J. Anderson				4								4 "
26 Marvin Dhanay				4								4 "
27 Ches. Combes				9	9							27 "
28 C. W. Watkins				9	9							27 "
29 Ches. Norman				9	9							27 "
30 Herman Russell	8		9	9	9							9 44 "

PARTIAL LIST OF EMPLOYEES TRANSFERRED TO FRUIT FLY PROJECT FROM
OTHER PROJECTS OF PLANT QUARANTINE AND CONTROL ADMINISTRA-
TION OR OTHER BUREAUS OF THE FEDERAL DEPARTMENT

Transferred to Florida and Assigned to Fiscal Work.-

Mr. H. T. Cronin was ordered to Florida on April 14 to take charge of expenditures of Federal funds and the purchase of equipment. Mr. Cronin is a member of the bar, a certified accountant, and a man who has been associated with the Department in various capacities for nearly fifteen years. He served as Administrative Officer and Disbursing Agent in connection with the emergency European corn borer cleanup campaign. Mr. Cronin arrived at Orlando on April 15, 1929, and on the same date was made a Temporary Special Disbursing Agent for the fruit fly project and authorized to make disbursements, exclusively by check, for the payment of temporary labor and emergency supplies.

Mr. C. M. Fox was ordered from Toledo, Ohio, to Florida on April 25, to assist Mr. Cronin. He arrived at Orlando on April 27. Mr. Fox has had twelve years accounting and auditing experience in the Department of Agriculture and prior to entering the Government service he had ten years experience in accounting work with the Pennsylvania Railroad. Since March 26, 1927 he has served as a Temporary Special Disbursing Agent in the Bureau of Entomology and the Plant Quarantine and Control Administration. Prior to his being ordered to Florida he was making disbursements on the European corn borer project for the payment of salary and traveling expenses and station expenses.

Transferred to Florida and Assigned to Investigational Work.-

Dr. A. C. Baker, Principal Entomologist, of the Bureau of Entomology, in charge of investigations on tropical and subtropical insects--especially fruit fly--proceeded to Florida on April 10 to take field charge of the investigational work on the fruit fly. Dr. Baker received the degree of B. S. in agriculture from the University of Toronto, having specialized in entomology, and the degree of Ph. D. at George Washington University where he specialized in zoology. He was employed by the Bureau of Entomology from June 1, 1911 until May 6, 1929 at which time he was transferred to the Plant Quarantine and Control Administration.

Mr. Chester B. Keck, Junior Entomologist, in the Bureau of Entomology, was transferred to the Plant Quarantine and Control Administration on May 6, 1929 to assist in conducting studies on the biology and habits of the fruit fly and to take charge of the unit engaged in making cage observations to determine fruits and vegetables which are subject to attack by the fruit fly. Mr. Keck received the degrees of B. S. and M. S. at Kansas Agricultural College having majored in entomology. While attending college he had four years experience assisting in research in economic entomology at the Kansas State Experiment Station, and assisted in teaching entomology laboratory courses. While he was taking graduate work he was appointed in the Bureau of Entomology on September 18, 1928.

Mr. William E. Stone, Associate Entomologist, in the Bureau of Entomology, was transferred to the Plant Quarantine and Control Administration on June 1, 1929, to be responsible for all scouting work in ~~Florida~~ to determine the location of Mediterranean fruit fly infestations in hosts other than citrus fruit, including a large number of wild and native plants which may serve as hosts. Mr. Stone received the degree of B. S. from the University of Florida, having specialized in entomology, and had approximately ten years experience with the Bureau of Entomology, during which time he was engaged in making studies of insect pests in Florida.

Mr. Orville C. McBride, Assistant Entomologist, in the Bureau of Entomology, was transferred to the Plant Quarantine and Control Administration on June 4, 1929, to be responsible, under the direction of Dr. A. C. Baker, for chemical investigations on insecticides to be used in connection with the fruit fly eradication campaign. Mr. McBride received the degrees of B. S. in agriculture and M. A. from the University of Missouri, has taken additional work looking to a doctor's degree at the University of Minnesota, and was employed by the Bureau of Entomology from April 1, 1925 until the date of his transfer. During this period he was engaged in making investigations of citrus and subtropical fruit insects at the Orlando laboratory.

Mr. Miyauoto McPhail, Assistant Entomologist, in the Bureau of Entomology, was transferred to the Plant Quarantine and Control Administration on December 1, 1929, to assist in investigational work on the life and seasonal history of the Mediterranean fruit fly. Mr. McPhail received the degree of B. S. from Clemson College in 1925 and has completed one year's work at Iowa State College toward his M. S. degree. From November 1, 1926, to November 15, 1927, he was employed in entomological work at the Texas Agricultural Experiment Station. On February 1, 1928, he was appointed in the Bureau of Entomology and was later placed in charge of the Mexican fruit worm insectary at Cuernavaca, Mexico.

Transferred to Florida and assigned to Quarantine and Scouting Work.

Transfers from Mexican Fruit Worm Project.- Mr. P. A. Hoidale, Plant Quarantine Inspector, who has been with the Department for twelve years and who has been in field charge of the eradication and quarantine work against the Mexican fruit worm since September 16, 1927, left Harlingen, Tex., for Orlando, Fla., on April 11, 1929, to assist in organizing the fruit fly work. He returned to Harlingen on April 17 and was later placed in charge of work in southern States, as indicated elsewhere in this section.

Dr. Foster H. Benjamin, Associate Entomologist and specialist in identification of the fruit fly and other insects injurious to fruit, and a man of international reputation as a taxonomist, was ordered from Harlingen, Tex., to Orlando, Fla., on April 11, 1929, to make determinations of insect specimens collected by scouts and inspectors. He arrived at Orlando on April 15. Dr. Benjamin has been employed by the Department since August 1, 1927.

Messrs. J. W. Monk, E. F. Pepper, A. V. Smith, J. W. Patterson, G. J. Potter, and J. M. Worsham, all of whom have been with the Department for a number of years, also arrived at Orlando on April 15 to assist in the fruit fly work. The first three of these employees remained in Florida for a temporary period only and were later returned to the Mexican fruit/worm work. Mr. Potter is still working in Florida. Messrs. Patterson and Worsham were later transferred to the division having charge of work in southern States, as indicated elsewhere in this section.

Transfers from Pink Bollworm Project.- Mr. Emery M. Dieffenbach, an Assistant Mechanical Engineer, who has been with the Department since June 16, 1925, and who is a specialist on machinery and its use in sterilizing seed cotton, was ordered to Florida on April 12, 1929, to assist in devising machinery for the disposal of infested fruit. He arrived at Orlando on April 15.

Messrs. J. M. Todd, J. H. Adams, Jr., F. V. Irvin, R. G. Oakley, K. R. Elliott, W. E. Gassett, T. R. Adkins, M. S. Mirimanian, and Wm. E. Conn were ordered to Florida on April 20, 1929, to assist with the fruit fly work for a temporary period. They arrived at Orlando on April 27. All of these men, with the exception of Mr. Oakley, were later returned to pink bollworm work.

Transfers from European Corn Borer Project.- Messrs. J. C. Krysl and J. D. Miller, two mechanics who are thoroughly familiar with spray equipment, were temporarily detailed to Orlando for the purpose of assisting in servicing equipment which was being assembled at that point. They left for Orlando on April 22.

Transfers from Bureau of Plant Industry.- Dr. L. A. Hawkins, Principal Physiologist in charge of fruit and vegetable handling, transportation and storage investigations, made various trips to Orlando during the month of August to assist growers with the installation of equipment for the sterilization of citrus fruits and to cooperate with the quarantine officers in supervising sterilization. During the latter part of the month, Dr. Hawkins, Mr. A. G. Galloway, and other members of Dr. Hawkins' organization in the Bureau of Plant Industry were indefinitely detailed to Florida for the purpose of continuing the work which he had assisted in establishing.

Transferred and Assigned to Work in Southern States.- Mr. P. A. Hoidale Plant Quarantine Inspector, who has been in field charge of the quarantine and eradication work against the Mexican fruit worm in Texas since September 16, 1927, was ordered to Atlanta, Ga., on May 7, 1929, to take charge of the

Mediterranean fruit fly work in southern States. He arrived at Atlanta on May 15. Under his new assignment, Mr. Hoidale supervises the scouting work in the Southern States other than Florida to determine the presence or absence of the Mediterranean fruit fly, and the border patrol which was established along the Florida-Alabama and Florida-Georgia lines to prevent the movement into these States of host fruits and vegetables in violation of the quarantine. When he was first transferred to Atlanta, Mr. Hoidale also supervised the tracing and inspections of host fruits and vegetables which had moved into the Southern States from infested areas of Florida. He has been in the service of the Department since December 1, 1917, serving on the pink bollworm project until he took over the Mexican fruit worm work.

To assist him in his new work, Mr. Hoidale took with him two experienced Mexican fruit worm employees, namely, J. W. Patterson, who has been employed by the Department since July 1, 1918, and who was assigned to Mexican fruit worm work on January 1, 1928; and J. M. Worsham, who was appointed on the Mexican fruit worm project on April 2, 1928.

Mr. G. M. Fagan was transferred from the Division of Accounts and Disbursements of the Department on June 7, 1929, to take charge of the business administration of the Atlanta office. Mr. Fagan has had twenty years' experience in the Division of Accounts and Disbursements.

Mr. Carol O. Larrabee, who has been employed on the European corn borer project since May 17, 1920, who has had years of experience in handling quarantine line work on that project, and who, for the last two seasons, has had immediate supervision of the corn borer quarantine lines in the western area, left Toledo on May 13, 1929, for Atlanta to confer and cooperate with Mr. Hoidale and others in the establishment of quarantine lines along the northern boundary of Florida. This was a temporary detail and upon completion of his work Mr. Larrabee returned to Toledo.

Mr. Emile Kostal, an Associate Quarantine Inspector, who has been with the Department since September 22, 1919, left New York on May 11, 1929, and arrived at Atlanta on May 12 to help organize and instruct scouts and inspectors as to methods of finding fruit fly larvae, and to aid in organizing the scouting work in the Southern States. Mr. Kostal is perhaps the most efficient inspector of the Plant Quarantine and Control Administration in locating fruit fly infestations in fruits and vegetables. Because of his exceptional ability, Mr. Kostal has on various occasions been selected to make surveys in Cuba and South American countries to determine the freedom of fruits in such countries from fruit fly. Incidentally, it was Mr. Kostal who first found fruit fly infestation in shipments of grapes which arrived at New York from Almeria, Spain. He returned to New York about the middle of August.

LIST OF PROMINENT SPECIALISTS WHO HAVE BEEN, OR ARE,
ASSOCIATED WITH THE WORK

First Committee.-

On July 5 the Secretary of Agriculture appointed a Committee of seven outstanding scientists to make careful studies of the status and possibility of the Mediterranean fruit fly and to study the desirability of the maintenance or expansion of the program then in force, or the alternative possibility of commercial control of the insect. This Committee was composed of the following members:

Vernon Kellogg, Permanent Secretary, National Research Council,
Washington, D. C.
H. A. Morgan, President, University of Tennessee
T. P. Cooper, Dean, College of Agriculture and Director of
Extension Work, Lexington, Kentucky
Victor R. Gardner, Director, State Experimental Station and
Professor of Horticulture, State College,
East Lansing, Michigan.
T. P. Headlee, Professor of Entomology, Rutgers College,
New Brunswick, State Entomologist of New Jersey
and Entomologist of State Experiment Station
G. A. Dean, Head, Department of Entomology, State Agricultural
College, and Entomologist, State Experiment
Station, Manhattan, Kansas
H. J. Quayle, Professor of Entomology, University of California,
and Entomologist of Citrus Experiment Station,
Riverside

The Committee submitted its report to the Secretary on July 19
(See Exhibit XIII A-4).

Second Committee.-

On October 12 the Secretary appointed a second Committee of outstanding men to study the fruit fly situation in Florida, with special reference to progress of the work during the preceding three months, the possibilities of eradication, and the future needs so far as could be determined at that time. This Committee was composed of the following members:

W. O. Thompson, President Emeritus of Ohio State University
W. C. Reed, commercial fruit grower of Vincennes, Indiana
W. P. Flint, Chief Entomologist of the Illinois Natural
History Survey
W. E. Alderman, Head of the Department of Horticulture,
University of Minnesota
J. J. Davis, Head of the Department of Entomology, Purdue
University.

The Committee submitted its report to the Secretary on October 22 (See Exhibit XIII A-6).

Federal Fruit Fly Board.-

On January 9 the Secretary of Agriculture appointed a Federal Fruit Fly Board to consider all biological and entomological questions and to determine policies in the actual fruit fly eradication work, and to supervise and control Federal expenditures in the eradication effort. This Board is composed of the following members:

Dr. W. C. O'Kane, State Entomologist of New Hampshire, Chairman
Dr. J. J. Davis, Professor of Entomology at Purdue University
Dr. P. J. Parrott, Entomologist of the New York Experiment
Station
Dr. W. P. Flint, State Entomologist of Illinois
Dr. George A. Dean, Professor of Entomology, Kansas State
Agricultural College

Prior to appointing the Board, the following telegram was sent to each of the men who were later appointed:

"I am convinced that importance and scope of Mediterranean fruit fly work requires appointment of a board to be stationed in Orlando whose combined scientific knowledge and judgment will be available for immediate direction of operations stop Doctor Newell and Florida State authorities share this view stop Members of such board should have had abundant experience in pest control matters and I am anxious to designate you on board stop In determining your own personal reaction to the offer and in discussing your availability with your institution I urge you to give full recognition to importance of assignment and opportunity for worthy national public service to the cause of agriculture even though you can be spared by your institution to serve for comparatively short time only stop Remuneration will at least equal your present salary and maintenance will be provided stop Please wire immediately your decision to Strong Plant Quarantine and Control Administration Orlando Florida indicating acceptable salary in order to expedite appointment and arrange transportation. Would like to be able to make announcement Wednesday night."

Agent Responsible for Certification of Restricted Products.-

On February 1, 1930, Mr. Walter A. McCubbin, formerly with the State Department of Agriculture of Pennsylvania, was appointed to be responsible for the certification of products for intrastate and interstate movement under the Federal and State quarantines on account of the Mediterranean fruit fly, involving supervision of work at packing houses, storages, canneries, and all other details connected with the issuance of permits for either the movement or handling of products covered by the quarantines. Mr. McCubbin received the degrees of B. A. in 1908 and M. A. in 1909 from the University of Toronto, and took a post

graduate course at Harvard University in 1911. He taught botany at the Ontario Agricultural College in 1911 and 1912. From 1912 to 1919 Mr. McCubbin was assistant to the Dominion Botanist of Canada in charge of work dealing with forest pathology. From 1919 to the date of his appointment with this Department he was plant pathologist of the Pennsylvania Department of Agriculture, having supervision of various State quarantines on account of pests such as potato wart, white pine blister rust, peach yellow, apple rust, and others.

IX--FEDERAL AND STATE LAWS AND QUARANTINES

A.--LAWS:--

1. Federal -

The Plant Quarantine Act of 1912, as amended (Exhibit IX-A), in Section 8 authorizes and directs the Secretary of Agriculture "to quarantine any State, Territory, or District of the United States, or any portion thereof, when he shall determine that such quarantine is necessary to prevent the spread of a dangerous plant disease or insect infestation, new to or not theretofore widely prevalent or distributed within and throughout the United States." It is under this authority that the various Federal quarantines and regulations on the Mediterranean fruit fly have been promulgated.

2. State -

The Florida Plant Act of 1927 (Exhibit IX-B), creates a State plant board, prescribes its powers and duties, and prescribes authority to protect the agricultural and horticultural interests of the State by preventing the introduction into or dissemination within the State of Florida of insect pests or diseases injurious to the plants and plant products of that State. It is under the authority of this Act that the State quarantine regulations on account of the Mediterranean fruit fly have been issued.

B.--QUARANTINES:--


1. Federal -

The Federal quarantine on account of the Mediterranean fruit fly has been revised three times. The original edition of the quarantine (Exhibit IX-C), which was issued on April 26, was distributed only in mimeographed form. On May 9, a revision of the regulations was issued to be effective May 10 (Exhibit IX-D). On June 7, the quarantine and regulations were revised so as to prohibit or restrict reshipments from uninfested States (Exhibit IX-E). The original quarantine, the revision of the regulations, and the first revision of the quarantine and regulations, provided for destruction of all host fruits and vegetables in infested areas. On August 20, the quarantine and regulations were revised effective September 1 (Exhibit F), introducing a number of fundamental changes. This revision made provision, under safeguards, for the interstate movement of restricted fruits and vegetables other than those produced in areas or on properties which may be determined as infested. It withdrew the requirement, included in previous regulations, for the destruction of host fruits and vegetables over considerable areas surrounding infestations.

2. State -

The original State quarantine was effective April 15. On the issuance of the Federal quarantine the State quarantine was revised (April 27th) to coincide, as far as intrastate movement was concerned, with the requirements of the Federal quarantine. Since then all editions of the State quarantine have, in so far as necessary or required, paralleled the Federal quarantine and included special requirements dealing with the local handling of restricted articles. The State quarantine has been amended on the following dates:

April 27	August 12
May 4	September 16
May 13	October 14
June 8	November 16
June 17	December 3
July 15	

There is appended as Exhibit IX-E,  copy of the Florida State quarantine effective September 16, 1929. This edition parallels and supplements the Federal quarantine effective September 1, and contains all but the more recent amendments.

X - ITEMIZATION OF EXPENDITURES OF FEDERAL FUNDS.

As indicated above (Section IV) two appropriations have been made by Congress for work on the fruit fly. These different appropriations have to be kept separate on the books maintained in Washington. The same is true of the money transferred in the initial stages of the work. A report on the expenditures of the funds transferred has already been submitted to Congress. (See item "General Administration", Plant Quarantine and Control Administration, p. 328-329 of Budget for 1931).

For convenience and ready reference there follows, in budget form, an itemization of all the expenditures and obligations, as coded on the books in Washington to February 15, 1930, of all of the Federal funds expended for work on the Fruit Fly. It is to be understood that vouchers are not posted until they have been audited and are ready to forward to the disbursing officer for payment. It should also be understood that there is an interval - the length depending on the nature of the account - from the time the expenditure has been authorized and the time it is submitted and approved for payment. For these reasons the total of the following itemization is necessarily somewhat approximate.

This itemization follows the various classifications required by the General Accounting Office except as to personal services which is not for those employed under separate appointment given under salary ranges. The number of appointed employees and a statement of the laborers is presented elsewhere in this report (See Section VIII). A detailed statement of the equipment which has been purchased will likewise be found in another section of this memorandum. (See Section VII).

The itemizations are given on the following pages:

Departmental service:

Total salaries, departmental service 14,552

Field Service:

Total salaries, field service 607,919

Wages, miscellaneous temporary employees 2,421,370

Total salaries and wages, field service 3,029,289

01 Total personal services 3,043,841

Supplies and materials:

0200 Stationery and office supplies 17,855

0220 Scientific supplies 314,168

0230 Fuel 60,207

0280 Sundry supplies 38,831

02 Total supplies and materials 431,061

04 Storage and care of vehicles 973

Communication service :

0500 Telegraph service 3,481

0510 Telephone service 3,813

0520 Other communication service 121

05 Total communication service 10,415

Travel expenses:

0615 Transportation 246,609

0616 Subsistence 188,534

06 Total travel expenses 435,143

07 Transportation of things (service) 104,958

Printing and binding:

0800 Printing and binding 13,936

0820 Stenographic work 203

0830 Photographing and making photographs and prints 4,059

08 Total printing and binding 18,198

09 Advertising and publication of notices 1,183

10 Furnishing of heat, light, power and electricity (service) ... 3,933

Rents:

1100	Rent of buildings and structures	9,894
1110	Other rents	199,461
11	Total rents	209,355
<hr/>		
12	Repairs and alterations	71,968
13	Special and miscellaneous current expenses	438
<hr/>		

Equipment:

3000	Passenger-carrying vehicles	16,105
3010	Furniture, furnishings, and fixtures	29,015
3020	Scientific equipment	37,772
3050	Other equipment (including auto trucks, sprayers, grinders, field equipment, etc.)	219,831
30	Total equipment	302,723
<hr/>		
32	Other structures	20,118
<hr/>		

Total (Vouchers available for coding on Feb. 15, 1930)....	4,654,307
Outstanding vouchers not yet available for coding	84,193
Total expenditures and estimated obligations	4,738,500

The foregoing itemization of all expenditures and obligations is further broken down into projects in the following statement:

	Florida other than investiga- tions	Southern States (At Large)	Investiga- tions	Washing- ton and Northern States
Departmental service:				
Total salaries, departmental service				14,552
Field Service:				
Total salaries, field service	438,924	73,987	78,179	16,829
Wages, miscellaneous temporary employees	2,261,622	94,149	63,726	1,873
Total salaries and wages, field service	2,700,546	168,136	141,905	18,702
01 Total personal services	2,700,546	168,136	141,905	33,254
Supplies and materials:				
0200 Stationery and office supplies	14,116	436	866	2,437
0220 Scientific supplies	296,294	1,441	16,384	49
0230 Fuel	52,733	6,280	1,194	---
0280 Sundry supplies	30,497	1,042	6,902	390
02 Total supplies and materials	393,640	9,199	25,346	2,876
04 Storage and care of vehicles	703	267	3	---
Communication service:				
0500 Telegraph service	1,909	348	454	770
0510 Telephone service	5,213	522	795	283
0520 Other communication service ..	4	---	---	117
05 Total communication service	7,126	870	1,249	1,170
Travel expenses:				
0615 Transportation	184,749	16,267	36,572	9,021
0616 Subsistence	120,452	31,776	31,014	5,292
06 Total travel expenses	305,201	48,043	67,586	14,313
07 Transportation of things (service)..	102,539	339	1,852	198
Printing and binding:				
0800 Printing and binding	5,046	26	7	8,857
0820 Stenographic work	96	105	2	---
0830 Photographing and making photo- graphs and prints	3,517	137	405	---
08 Total printing and binding	8,659	268	414	8,857

	Florida other than investiga- tions	Southern States (At Large)	Investiga- tions	Washing- ton and Northern States
09 Advertising and publication of notices	85	---	---	1,098
10 Furnishing of heat, light, power and electricity (service).....	2,393	11	1,229	---
<hr/>				
Rents:				
1100 Rent of buildings and structures	8,515	1,266	113	---
1110 Other rents (trucks, sprayers, etc.)	198,809	20	632	---
11 Total rents	207,324	1,286	745	---
<hr/>				
12 Repairs and alterations	67,632	1,596	2,388	352
13 Special and miscellaneous current expenses	11	338	89	---
<hr/>				
Equipment:				
3000 Passenger-carrying vehicles	---	11,682	4,423	---
3010 Furniture, furnishings, and fixtures	22,127	1,123	3,092	2,673
3020 Scientific equipment	25,539	31	12,065	137
3050 Other equipment (including auto trucks, sprayers, grinders, field equipment, etc.) ..	202,019	8,966	8,846	---
30 Total equipment	249,685	21,802	28,426	2,810
<hr/>				
32 Other structures	8,802	---	11,316	---
<hr/>				
Total (Vouchers available for coding on February 15, 1930).....	4,054,676	252,155	282,548	64,928
Outstanding vouchers not yet avail- able for coding	61,232	7,654	15,307	---
Total expenditures and obligations	4,115,908	259,809	297,855	64,928
<hr/>				
Florida other than investigations	4,115,908			
Southern States (At Large)	259,809			
Investigations	297,855			
Washington and Northern States	64,928			
Grand Total	4,738,500			

XI. - STATEMENT OF BALANCE OF FUNDS AVAILABLE

As indicated in the above itemization of expenditures the book balance of all funds available for work on the Mediterranean fruit fly, as of February 15, 1930, is \$834,000. The total of this itemization is, because of the nature of the accounts and the time element involved, necessarily somewhat approximated. To overcome this we have perfected a detailed system to secure a carefully estimated average daily rate of expenditures. During certain weeks since the first of January the average daily expenditures have been \$13,600; but taking the month of January and the first half of the month of February as a whole, the average daily expenditures has been \$12,000. This amount is distributed among various lines of work approximately as follows:

Field Inspection, Quarantine Enforcement, and General Administration in Florida	\$8,100.
Inspection and Certification for the move- ment of Products	1,400.
Supervision of Sterilization	850.
Investigations	850.
Quarantine Enforcement in Southern States	550.
Washington Administration and Quarantine Enforcement in Northern States	<u>250.</u>
TOTAL	\$12,000

It should be understood that since January 1, 1930, no Federal funds have been expended for those phases of work directed primarily at eradication. Should infestations necessitating cleanup and spraying be discovered there would necessarily be a decided increase in the average daily expenditures.

It should also be understood that in event all work is discontinued it would be necessary to hold in reserve a certain amount (1) to protect the Government property and leases, and (2) to permit the disbandment of the work and the closing out of accounts.

Without any modification of the present program of expenditures it is estimated that the work now being carried on can be continued with the funds available until April 15, 1930, and leave a balance sufficient to protect Government property, leases, etc.

XII. Chronological Statement of Important Events Re Mediterranean Fruit Fly.

The situation regarding the Mediterranean fruit fly has changed so rapidly it is believed that the following chronological list of the more important events connected with the work will be useful to the committee.

1929

APRIL

6. Suspected larvae found.
9. Dr. Montgomery of the Florida State Plant Board arrived in Washington with specimens.
10. Specimens identified by Dr. J. M. Aldrich of the National Museum and confirmed by C. T. Greene of the Bureau of Entomology as Mediterranean fruit fly.
Dr. C. L. Marlatt, Chief of the Bureau of Entomology and Plant Quarantine and Control Administration and Dr. A. C. Baker of the Bureau of Entomology proceed to Florida accompanied by Dr. J. H. Montgomery.
Department approved transfer of 10% of pink bollworm funds to meet present emergency.
11. P. A. Hoidale, leader in charge of the work on the Mexican fruit worm, F. H. Benjamin, qualified taxonomist, and six other trained scouts on the Mexican fruit fly work ordered to Florida arriving there on the 15th.
12. E. M. Dieffenbach, associate engineer, associated with the pink bollworm work of the Department, ordered to Florida, arriving there on the 15th.
14. H. T. Cronin an old employee of the Department ordered to Florida to assume charge of fiscal matters and purchases, arriving there on the 15th.
15. Florida State quarantine issued, effective same date.
Announcement of Federal hearing to be held April 22 issued by Secretary Hyde.
Governor of Florida made available emergency funds for work on fruit fly.
16. Governor of Florida issues order calling out State Guard.
17. Georgia State Board of Agriculture promulgates quarantine re Mediterranean fruit fly in Florida and establishes quarantine stations on roads leading into Georgia from the south.
18. State Militia of Florida patrolling roads around infested areas.
22. Public hearing re necessity of Federal quarantine.
23. Quarantine officers in Cotton Belt States urged to inspect low-grade Florida citrus fruits in markets and in storage and, under State authority, destroy infested shipments.
Budget requested to authorize the use of \$4,250,000 from the unexpended balance of the appropriation of \$5,000,000 for compensating farmers on account of the establishment of noncotton zones.
24. President submitted estimate to Congress.
25. Alabama places quarantine against Florida on account of Mediterranean fruit fly and establishes quarantine stations on roads leading into Alabama from the south.
26. Federal quarantine signed, effective immediately as to interstate shipments from infested areas designated in Florida State quarantine, otherwise effective May 1. House passed Joint Resolution for \$4,250,000.

April

27. Florida State quarantine modified to correspond with Federal and infested areas increased.
29. Senate passed Joint Resolution appropriating \$4,250,000 for work.

MAY

1. Federal quarantine effective (See also April 26.)
2. President signs joint resolution making appropriation of \$4,250,000.
4. Florida State quarantine revised.
10. First amended Federal quarantine effective.
13. Florida State quarantine revised and Western part of State made Zone 4.
15. Conference held Atlanta to organize work in Cotton Belt States.
16. Administrative amendment issued, prohibiting shipments of Florida host fruits and vegetables into 18 southern and western States and Territory of Porto Rico.
28. Florida State quarantine revised.
Secretary announces hearing to consider advisability of extending Mediterranean fruit fly quarantine to include all States of the United States.

JUNE

1. Hearing on Mediterranean fruit fly quarantine held.
7. Federal quarantine revised, prohibiting reshipment of Florida host fruits from Northern destinations into Southern and Western States.
8. Florida State quarantine revised.
17. Florida State quarantine revised and extended.
18. Secretary Hyde submits report on bill for partial reimbursement of growers for losses sustained.

JULY

1. Conference with Secretary and submission of estimates for funds required.
2. Secretary took steps to appoint Committee of Specialists.
Quarantine amended authorizing shipment of grapes from cold storage plants--PQCA-238.
8. Secretary announces appointment of Committee of Experts. Committee conferred with Secretary in Washington and left for Florida.
18. Committee of experts returned to Washington and conferred with Secretary.
Secretary issued statement indicating belief that it will be possible to modify regulations and permit movement of crop under sterilization.
19. Secretary makes public the report of the Committee of experts.
23. Quarantine amended authorizing shipment of limes from Dade and Monroe Counties--PQCA-240.
24. Secretary, Director Campbell, and Dr. Marlatt went to Florida to personally investigate the situation and confer with growers.
26. Secretary, Director Campbell, Dr. Marlatt, addressed a meeting of growers at Winter Haven.

AUGUST

12. String beans removed from list of host--PQCA-242.
20. Secretary signs new quarantine, effective September 1.
26. Secretary submits estimate of \$26,000,000 to Director of Budget and reappropriations funds available for work on fruit fly.
30. Quarantine amended authorizing shipment of Florida citrus prior to October 1.

SEPTEMBER

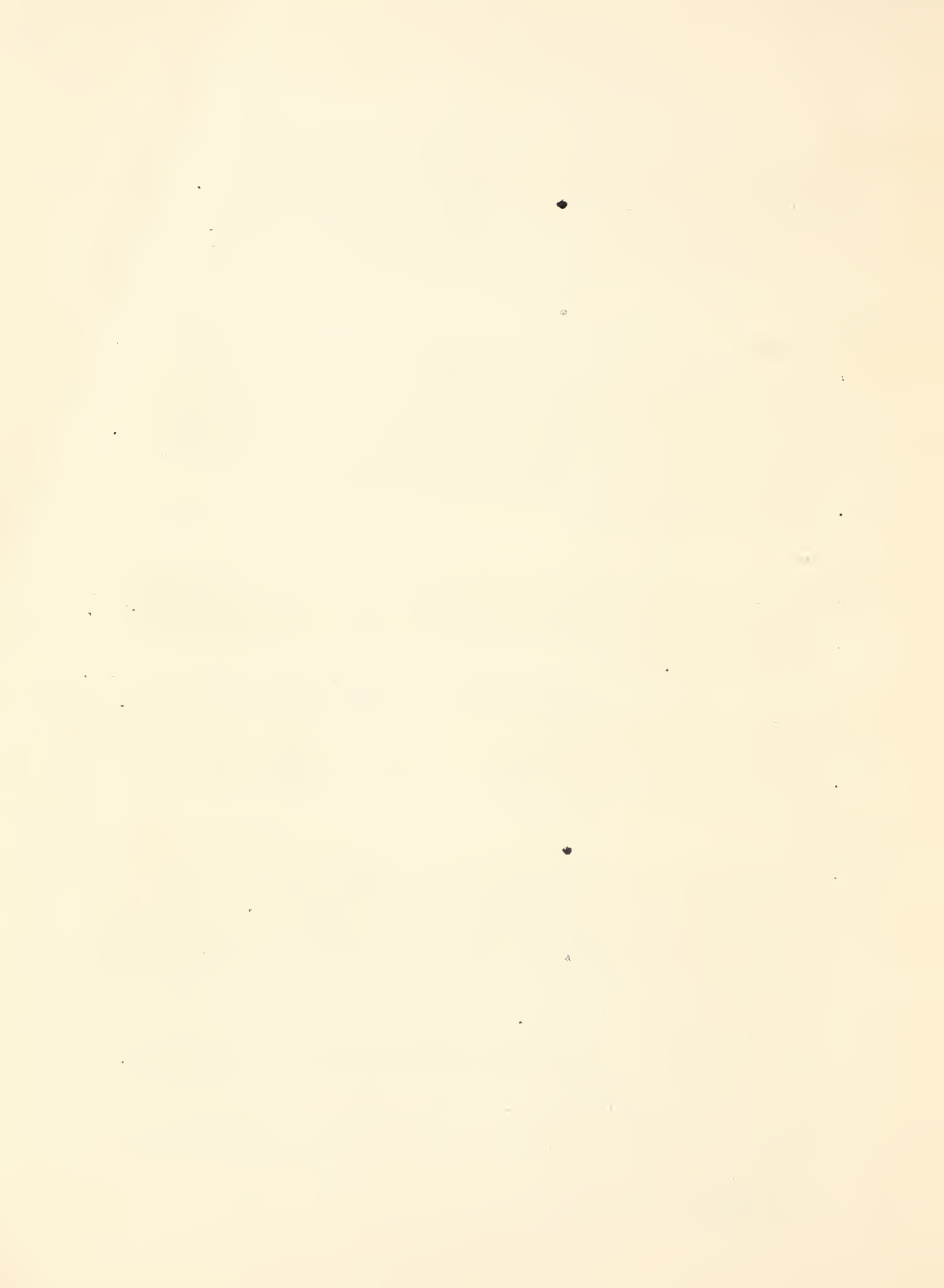
1. New quarantine effective including amendment signed the 30th.
7. Quarantine amended authorizing diversion of Florida products at certain southern points--PQCA-244.
16. Boundaries of eradication areas redefined removing from area certain portions of Polk and Hillsborough Counties--PQCA-245.
19. Sterilization of citrus fruits by low temperatures authorized for Florida and northern destinations--PQCA-246.
27. Additional information re sterilization by low temperatures issued to public--PQCA-247.

OCTOBER

11. Quarantine amended to provide for weekly instead of semi-weekly cleanup in groves and gardens in eradication area--PQCA-250.
12. Quarantine amended releasing infested areas established prior to August 1.--PQCA-251.
Committee selected by Representative Wood and appointed by Secretary stopped in Washington prior to departure to Florida.
22. Committee appointed on the 12th returned from Florida and submitted report to Secretary.
23. Sterilization of grapefruit by heat authorized--PQCA-252.
28. Report of Committee appointed on the 12th released to press.

NOVEMBER

11. Representatives of southern and western States invited to attend conference on the 16th to consider movement of sterilized citrus fruits into southern and western States.
12. Quarantine amended authorizing movement of Florida host fruits and vegetables into Arlington and Fairfax Counties, Va.--PQCA-253.
16. Conference of representatives of southern States to consider movement of Florida sterilized citrus fruits into restricted territory for winter period.
21. Quarantine amended authorizing movement of sterilized host fruits and vegetables into southern and western States--PQCA-254.
27. Sterilization of oranges, tangerines and satsumas by use of heat sterilization--PQCA-255.
Secretary makes available \$290,000 of regular appropriation to Plant Quarantine and Control Administration for work on fruit fly.
30. Areas designated as infested during the month of August released--PQCA-256.



DECEMBER

9. President submits estimate for funds required for work on fruit fly.
17. Instructions sent to inspectors re interstate shipment of celery--PQCA-257.
21. President approves public resolution No. 29, 71st Congress, making available \$290,000.
26. Instructions to inspectors modifying requirements as to the type of containers in which Florida host fruits and vegetables could be shipped interstate--PQCA-258.

1930

JANUARY

9. Secretary while on trip in West announced the appointment of a Federal Fruit Fly Board.
13. State Plant Board of Florida issues statement that eradication features of the work has been discontinued.
15. Secretary announces that its first meeting will be held in Orlando on January 21.
16. Secretary announces that the Federal Fruit Fly Board will be glad to receive and consider complaints from growers.
23. Quarantine amended extending diversion privileges for fruit moving into far western States--PQCA-261.
Quarantine amended extending to February 28 period when Florida host fruits and vegetables can move into southern and western States--PQCA-262.

FEBRUARY

3. Quarantine amended authorizing movement under permit of Florida host fruits and vegetables from Washington, Baltimore, and Pittsburgh, into States of Virginia, West Virginia, and Ohio.--PQCA-263.
6. Quarantine amended extending to June 15 the harvesting period for cantaloupes--PQCA-264.
10. House of Representatives passes resolution authorizing sub-committee of appropriations to conduct hearings in Florida and elsewhere in examining estimates on appropriations for eradication and control of the prevention of spread of the Mediterranean fruit fly.
11. Instructions to inspectors authorizing the use of water-proof fabric mesh bags for interstate shipment of car lots of citrus fruits--PQCA-266.

XIII-GENERAL STATEMENTS RE FRUIT FLY WORK ISSUED BY DEPARTMENT

In connection with the work on the Mediterranean fruit fly, certain statements other than those having direct reference to modification of the quarantine and regulations have been given to the press. A list of these follows, and copies are appended as Exhibit XIII-A.

- (1) May 20, 1929.--"War Against the Mediterranean Fruit Fly" (PQCA-230).
- (2) July 8, 1929.--Press Release "Specialists Appointed to Study Fruit Fly in Florida."
- (3) July 18, 1929.--Press Release "Secretary Hyde Suggests Florida Citrus May Be Made Safe for Shipment." The statement was given to press on the evening of the 18th. The mimeographed copies were dated the following day.
- (4) July 19, 1929.--Press Release "Report on Fruit Fly Eradication Made to Secretary Hyde."
- (5) July 24, 1929.--Press Release "Secretary Hyde and Agriculture Officials To Visit Florida Fruit Fly Section."
- (6) October 28, 1929.--Press Release "Report of Special Committee to Study Status and Needs of Mediterranean Fruit Fly Campaign."
- (7) January 15, 1930.--Press Release "Federal Fruit Fly Board is Ready to Begin Work--Board Created by Secretary Hyde Will Hold First Meeting in Orlando January 21."
- (8) January 16, 1930.--Press Release "Federal Fruit Fly Board to Establish Contacts with Industry."

Two of these press releases, Nos. 4 and 6 in the above list, are reports made to the Secretary of Agriculture by two groups of nationally-known specialists. These reports are of interest as they deal with policy of the eradication work.

